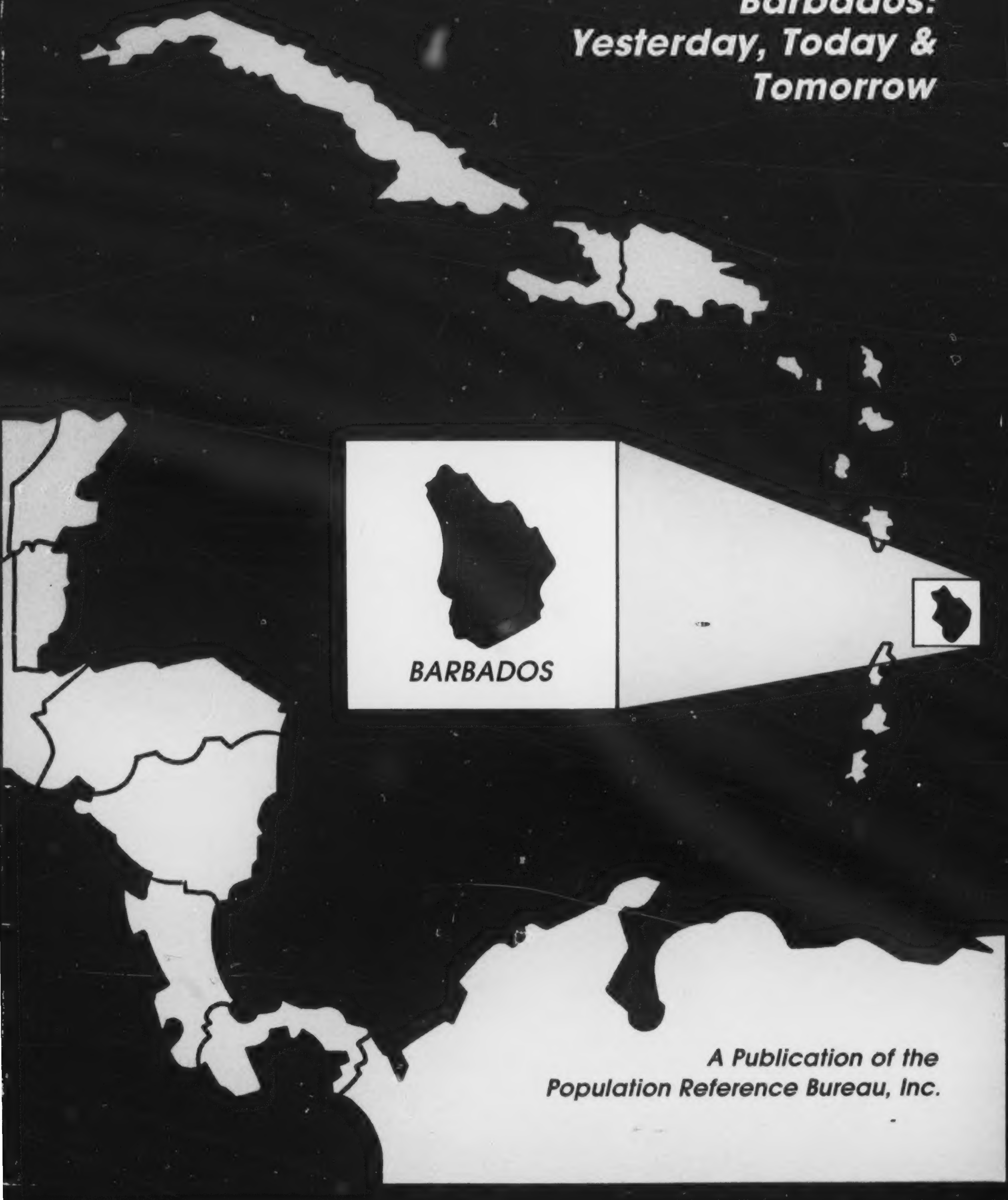
PRB OCCASIONAL SERIES: THE CARIBBEAN

Barbados: Yesterday, Today & Tomorrow



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Barbados: Yesterday, Today & Tomorrow

by Leon F. Bouvier
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Barbados: Yesterday, Today & Tomorrow

Barbados Yesterday

The demographic history of Barbados has been characterised by high population density and significant migration from the island.

The first modern census, in 1844, reported a population of 122,198 (see Appendix Table A), which meant there were 736 persons per square mile. By 1946, there were 193,680 Barbadians (1,160 per square mile). This slow rate of growth (0.46 percent annually) was due to emigration to other British West Indian territories—especially the larger, less densely populated countries of Guyana and Trinidad—and, from the end of the nineteenth century, to countries outside the region. Indeed, net emigration between the censuses of 1891 and 1921 exceeded the balance between births and deaths (the country's natural increase) by 54 percent and was responsible for a decline in population from 182,867 to 156,774.

From 1921 to 1946, a significant decline in mortality occurred. Infant deaths per 1,000 live births (the infant mortality rate) declined from 283 to 157 and the average length of life increased from 30 to 50 years. Furthermore, the completion of the Panama Canal and the passing of U.S. quota laws in 1921 and 1924 effectively closed two very important outlets for Barbadians and caused a dramatic decline in emigration, down to 6.5 percent of the natural increase. The result was a resurgence of growth and by 1942 the population regained its 1891 level.

The census of 1960 counted 232,820 persons. From 1946 to then, therefore, annual growth averaged 2,800 people—a rate of 1.34 percent. Mortality continued to decline rapidly during these years: The average length of life increased from 50 to 65 years while the infant mortality rate dropped from 157 to 70 (see Appendix Table B). At the same time there was a slight decrease in fertility. The average number of live births per 1,000 population (the crude birth rate) was 33.5 in 1946 and 31.9 in 1960.

The rate at which the population grew would have been faster had it not been for the start of another stream of migrants, this time to the United Kingdom. Net emigration amounted to an annual average of 1,350 persons, 32.5 percent of the natural increase between 1946 and 1960. For the second successive intercensal period, the principal determinant of population growth was the fall in mortality.

Population growth slowed appreciably between 1960 and 1970. The 1970 census enumerated 235,229 persons, representing an annual average intercensal increase of 540 persons, only one-fifth as many as the previous period. One reason for this reduced rate of growth was the continued high level of emigration. The movement of Barbadians to the United Kingdom, which had started in the early 1950s and increased rapidly that decade, reached a peak. This emigration slowed as a result of a number of restrictive measures by the United Kingdom in the 1960s—particularly the Commonwealth Immigrants Act of 1962. Around the same time, howver, entry requirements to Canada and the United States eased somewhat and so emigration continued, albeit to different destinations.

Although the dampening effect of emigration on population growth during this period is clear, the decline in fertility also made a significant contribution. From the turn of the century, Barbados experienced, in the context of the Caribbean, consistently low levels of fertility with little variation until 1960. By 1970, however, the total fertility rate (TFR)—the number of children born during a woman's reproductive years—fell to 3.0 from a figure of 4.7 in 1960.

It is interesting to note that a Government-appointed Joint Committee of the Legislature, in a 1954 report, strongly recommended the institution of a "system of family planning under the aegis of the Government." The Barbados Family Planning Association was set up the following year, and received government financial support in 1956. Its existence undoubtedly played a significant role in subsequent fertility declines, which brought birth rates down to levels comparable to those in Europe and North America.

Barbados Today

A total of 244,228 persons were enumerated in the 1980 census of Barbados. This represented an increase of 8,999 (3.8 percent) over the population in 1970, which yields a low average annual rate of growth during the decade of .37 percent.

Differences between births and deaths (that is, natural increase) and between immigration and emigration (net migration) account for all changes in population size. As in earlier decades, population growth in Barbados during the 1970s was due to the excess of natural increase over net emigration: There were about 27,000 more births than deaths, while net emigration was estimated to be about 18,000.

Fertility declines since 1970 have been dramatic. The total fertility rate fell to 1.9 in 1980. Among all independent developing countries, only Barbados and Cuba have fertility rates below the level needed to replace the population in the long run, assuming net migrations of zero.

Mortality rates fell slightly during the decade and by 1980 the crude death rate was 8 per 1,000 population. Life expectancy at birth rose from 68 in 1970 to about 70 in 1980—a level comparable to most developed countries in the world. Similarly, infant mortality fell from 46 in 1970 to 23 in 1980. Among developing countries, Barbados ranks near the top in all indices of success in reducing mortality.

As in most countries, arriving at reasonable estimates of net international migration is particularly difficult. For this report the reverse projection method has been used to arrive at an estimate of the net migration by age and sex for 1970–79.* Based on this approach, about 18,000 more people left the country than entered it. According to U.S. and Canadian immigration data, 18,281 Barbadians entered the United States during the decade (see Table 1) and 5,873 entered Canada. The net emigration of 18,000 translates into a rate of 7.5 persons per 1,000. Although this is high by international standards, it is nevertheless considerably lower than that noted for earlier decades. Indeed, it has been estimated that if there had been no emigration since 1950, the 1980 population of Barbados would approach 370,000 rather than 244,000.

Table 1: Permanent Barbados-Born Immigrants Admitted to the United States, 1955–80

Year	Number
1955–59	1,274
1960–64	1,970
1965–69	5,944
1970–74	8,034
1975	1,618
1976	1,743
1977	2,763
1978	2,969
1979	2,461
1980	2,667

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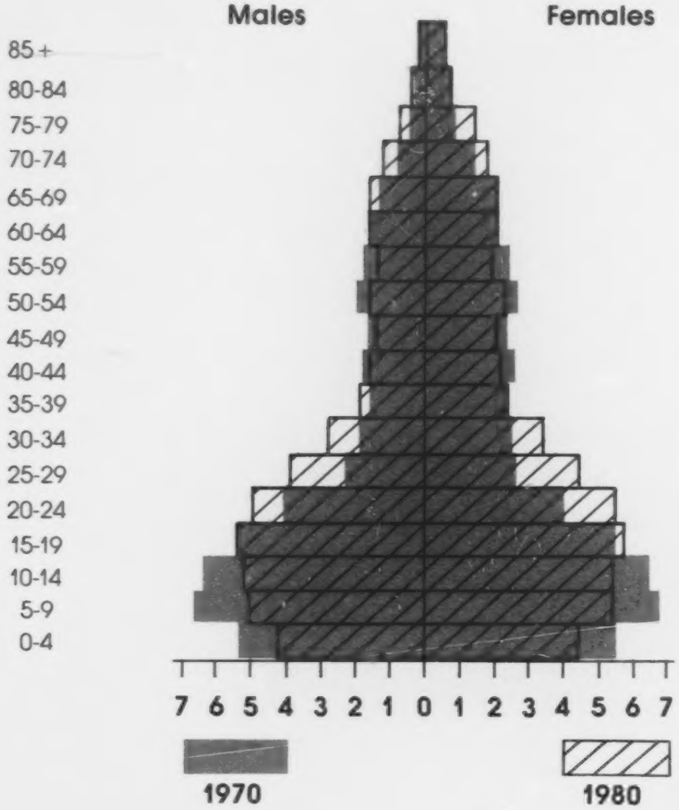
*The reverse projection method "survives" the population by age and sex backward in five-year intervals. By using appropriate survival rates, a population—males aged 45–49 in 1980, for example—can be restored to the number who would have been 40–44 in 1975 and 35–39 in 1970. Assuming relatively complete censuses in both 1970 and 1980, any differences in the age-sex distribution in 1970 between the restored and the actual enumerated populations must be accounted for by either immigration or emigration. This yields only a rough estimate of the level of net migraiton over a decade; nonetheless it is the best available, short of actual data on migration itself.

Figure 1: Age-Sex Distribution of Barbados, 1970 and 1980



Significant changes in fertility and migration and the improvement in mortality during the 1970s contributed not only to a small increase in numbers but also to a variation in the age distribution of the population, as noted in Figure 1. Overall, the population aged slightly—the median age rising from 21.2 in 1970 to 24.5 in 1980. The percent under 5 fell from 10.9 to 8.6, while that of people 65 or older grew from 8.3 to 10.5. The so-called active population (15–64) increased from 54.6 to 59.9 percent. The number of active people per 100 dependent persons (those under 15 and those 65 or older) changed from 82.9 to 78.6. Thus fewer working-age people were needed to support the dependents—in part because of declining fertility.

Changes in age distribution and dependency ratios are important; numerical changes are perhaps even more significant for policymaking. The rapid decline in fertility during the 1970s meant the number of school-age children (5–14) fell by 10,000—from 61,450 to 50,917. On the other hand, the elderly population, 65 or older, grew by over 6,000—from 19,489 to 25,501. This is typical of societies experiencing declines in fertility and improvements in longevity—the number of children falls while that of the elderly grows.

The future of Barbados, demographically speaking, is one of eventual population stabilization, given the current levels of fertility and net migration. Nevertheless, its age composition suggests that the built-in momentum for growth will result in increasing numbers for at least the immediate future.

Barbados Tomorrow

In developing population projections for the next 50 years, the selection of appropriate assumptions about demographic behaviour is critical. Furthermore, population projections should not be confused with population predictions. This report does not attempt to predict the number and age distribution of Barbadians in any future year. Rather, it indicates what the size and the composition of the population would be under specific assumptions about future levels of fertility, mortality, and migration. Policymakers can then better assess the impacts of possible changes in demographic behavior.

Demographic Assumptions: Two postulates of fertility behaviour are used. One is that the present total fertility rate of 1.91 continues for the next 50 years—in other words, that the age-specific fertility rates in 1980 remain unchanged. The second assumes a 10 percent decline in fertility at all ages in 1990, so that the TFR would fall to 1.72, with the age-specific rates that would then prevail remaining constant thereafter.

Only one set of mortality assumptions is used—that the current life expectancy of 72 for women and 68 for men increases to 75 and 72, respectively, in 2000, and to 77 and 74 by 2020.

Three sets of migration patterns are used. One assumes the 1970–80 levels, under which annual net emigration is 1,800. In the second, levels of net emigration are immediately (that is, in 1980) halved, so that the net outflow of population is 900. (The proportional age-sex distribution is the same in both sets.) The third set assumes a net migration of zero.

Based on various combinations of these assumptions about fertility and migration, a number of scenarios of population growth in Barbados have been prepared (see Figure 2; for supporting data, see Appendix Table C):

Scenario A – current fertility (1.91) and current net emigration (1,800 per year)

Scenario B – declining fertility (1.72) and declining net emigration (900 per year)

Scenario C – current fertility (1.91) and declining net emigration (900 per year)

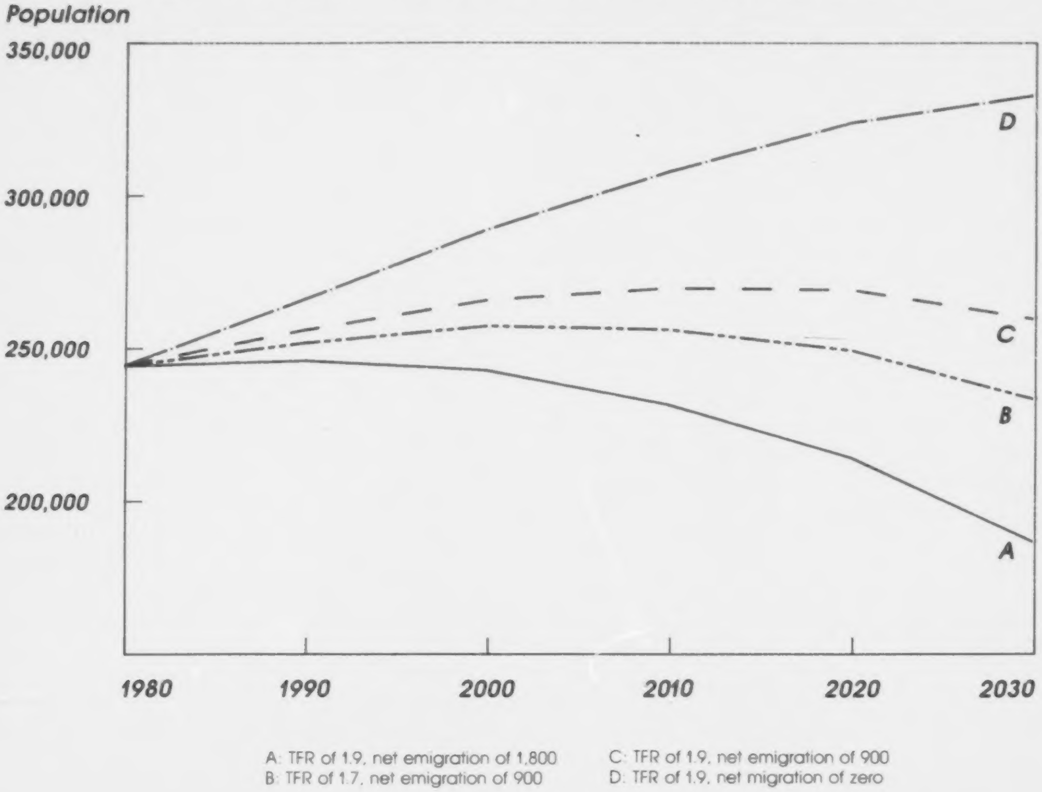
Scenario D – current fertility (1.91) and net migraiton of zero.

The implications of these scenarios are discussed in some detail in the remainder of this report. These are, of course, but four of the many possible combinations of fertility and migration levels (see Appendix Table D for population projections under three other combinations), but they represent the most likely patterns of future population growth in Barbados at this time.

Population Projections: The continuation of current fertility rates, which are quite low, and net emigration (Scenario A) would mean no further population growth in Barbados and that numbers would begin to decline shortly before the turn of the century. Indeed, if fertility and migration rates remained at approximately their 1980 levels for the next 50 years, the 2030 population of Barbados would be about 187,000, some 57,000 less than it was in 1980. The crude birth rate would be 8.8 per 1,000, while the crude death rate would be 15.5.

Although Scenario A is an encouraging one, is it realistic to assume that the fertility rate in Barbados will remain at such a low level? More importantly, perhaps, is it realistic to think that net emigration can remain at its present high level for the foreseeable future? What would occur if net emigration were cut in half, to 900 per year, or if it were eliminated entirely? Both are reasonable possibilities. The United States and Canada are considering revisions in their immigration policies that could mean substantial reductions in the number of people allowed to enter from the Caribbean and elsewhere, as hap-

Figure 2: Population of Barbados, 1980–2030



pened when the United Kingdom imposed restrictions in the 1960s.

In addition, there is evidence of increasing immigration into Barbados from neighbouring as well as the metropolitan countries—the latter consisting predominantly of returning Barbadians. Thus, both Scenario C (present fertilty and average annual net emigration of 900) and Scenario D (present fertility and net migration of zero) should be seriously considered as possible future population paths of Barbados.

Under Scenario C, the population would continue to grow until 2015, when it would peak at 270,000 before falling slightly thereafter to 260,00 in 2030—some 10 percent above its current level. Such growth may well be acceptable but it is probably the highest desirable in a nation that already has the highest density in the Western Hemisphere.

Scenario D is particularly illustrative of the built-in momentum for growth that is present in a relatively "young" population, such as Barbados has today. Without any net emigration (that is to say, if the number entering the country equals the number leaving), and despite the fact that fertility would be below the level needed to replace the population, Barbados would grow from 244,000 in 1980 to 290,000 at the turn of the century and then to 333,000 in just 50 years.

Even if fertility were to drop to 1.7, the combination of the momentum of population growth and the elimination of a net loss of people through migration would yield 280,000 Barbadians in the year 2000 and 302,000 in 2020 before growth stopped. (For details of this projection see Appendix Table D, Scenario E.)

Such growth may seem perplexing to the casual observer. After all, women are only averaging 1.9 live births. But the high fertility of the late 1960s and early 1970s and the curtailment of emigration of young adults under Scenario D would mean that more women would be "available" to have that average number of 1.9 children for the next few decades. Indeed the *number* of births under this scenario would increase from 4,200 in 1980 to 4,700 in 1995 before falling gradually back to 4,000 around 2025.

Net migration is the critical variable that must be monitored very closely if Barbadians are concerned about population growth. Any net loss through migration below 900 people per year would result in substantial growth in the near future. Is a population of 275,000, for example, acceptable in the year 2000? Such numbers are very plausible, even with low fertility, given reduced emigration. If this is considered too large, the only solution—if a reduction in net emigration does occur—is to continue to reduce fertility.

Scenario B meets the concerns about problems associated with a growing population quite adequately. If the total fertility rate were cut by 10 percent (to 1.72) by 1990 and remained at that level thereafter and if annual net emigration averaged 900, the population would peak at 258,000 in 2025 before beginning a slow decline to 233,000 by 2030. At first glance, reducing fertility even more than at present may seem too ambitious. Yet all it would require to attain a TFR of 1.72 would be a 20 percent reduction in adolescent fertility and in that of women in their early twenties. Improvements in the delivery of contraceptives and in sex education programs could go a long way towards attaining this goal.

What if present concerns about reduced emigration are unfounded and the net loss continues at current levels in the future? What would be the impact of lower fertility under these circumstances? The size of the population would fall to 235,000 by the turn of the century and to 164,000 by 2030 (see Appendix Table D, Scenario F). If Barbados could be assured of continued acceptance of some 2,000 immigrants every year by the metropolitan countries, then further fertility declines might not be necessary.

However, fertility levels would still need to be monitored closely. A slight increase in fertility would have significant impact on the future size of the population. Projections of the population with continued high net emigration but with fertility of 2.4 illustrate the tremendous impact of a change in the average number of children per woman (see Appendix Table D, Scenario G). Having half a child more on average would result in 264,000 Barbadians in the year 2000, with slight increases over the following 20 years—despite the continued large net emigration of some 18,000 people per decade.

As far as population size is concerned, Barbados is in a relatively fortunate position compared with other East Caribbean nations. Nevertheless, only small numerical increases can be tolerated. If net emigration is drastically curtailed or if fertility increases well above replacement, substantial growth could occur. Reductions in net emigration seem quite probable and slight increases in fertility could indeed take place. Thus, while the picture appears positive, relaxation of concern could prove troublesome. Only if both migration and fertility are kept within reasonable bounds can Barbados reduce its growth to a minimum, if not zero, before the turn of the century.

As indicated earlier, it is not only population size that is affected by changes in demographic behaviour; equally important is the impact of such changes, particularly in fertility and migration, on the age distribution of the population. Indeed, changes as far back as the 1950s and 1960s will affect the nation for the next 50 years.

Continued low fertility—whether 1.9 or 1.7—guarantees an aging population (see Table 2). No matter which of the scenarios described above actually occurs, the proportion of the population 65 or older (the elderly) will increase in the future while that under age 15 will decrease. Variations in the active population (those between 15 and 64) will not be as dra-

Table 2: Percent Distribution of Population by Age-Group in Barbados, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
Scenario A						
Under 15	30	24	22	18	16	14
15–64	60	65	67	70	66	57
65 or older	10	11	11	12	18	29
Scenario B						
Under 15	30	23	21	18	15	14
15–64	60	67	69	72	69	61
65 or older	10	10	10	10	16	25
Scenario C						
Under 15	30	24	23	20	17	16
15–64	60	66	67	70	68	61
65 or older	10	10	10	10	15	23
Scenario D						
Under 15	30	24	23	21	19	18
15–64	60	66	68	70	68	64
65 or older	10	10	9	9	13	18

matic. Generally, there will be a reversal in the proportions of the young and the old. For example, in Scenario A (a continuation of current emigration and fertility), the proportion under 15 and over 64 will shift from 24 percent and 11 percent, respectively, in 1990 to 14 percent and 29 percent in 2030. A somewhat similar pattern is noted under all scenarios.

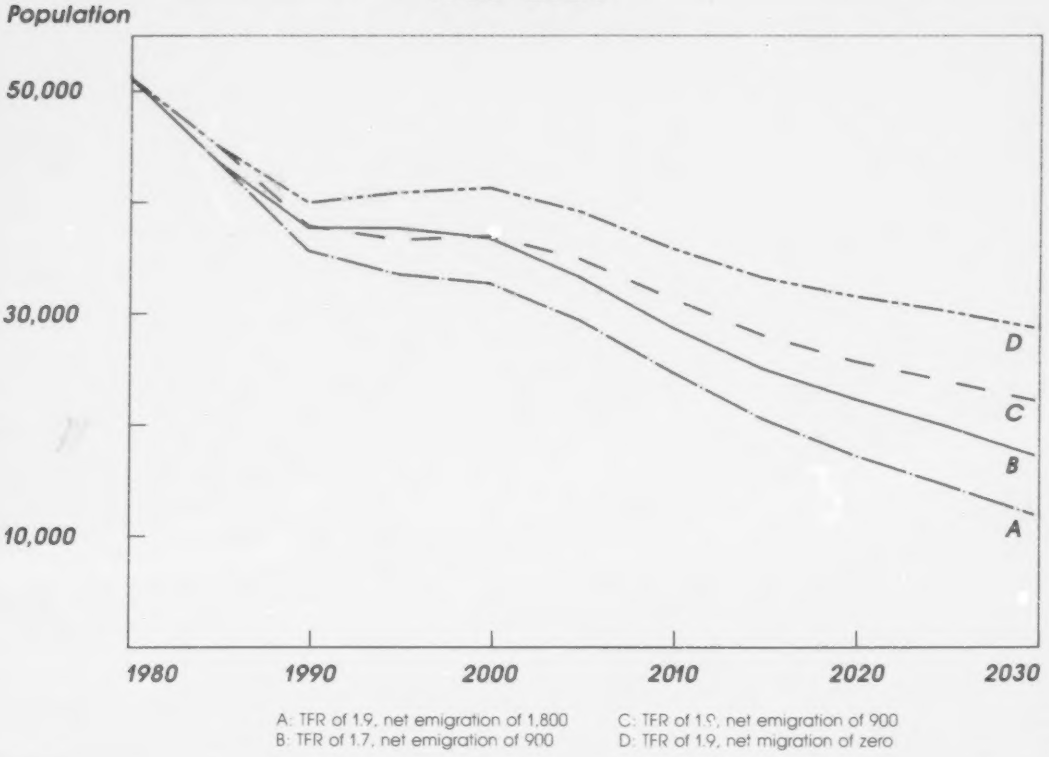
Taken together, past, present, and future fertility and migration behaviour are going to cause substantial changes in the age distribution of the nation over the next 50 years—changes that will affect the size of school enrollments, the labour force, and the elderly population.

School Enrollment: In 1980, the number of children aged 5–14 was about 51,000. Under Scenario A, that number would fall to 37,000 by the turn of the century and to 17,000 by 2030—a remarkable decline in just 50 years. With emigration cut in half (Scenario C), school enrollment would still fall, though not as much—to 41,000 in 2000 and 29,000 in 2030. Lower fertility (Scenario B) results in even smaller numbers of school-age children in the population. (See Figure 3; for supporting data, see Appendix Table E.)

If all emigration is halted, however, the number of children in school in future years, while smaller than today, would be much greater than under the other scenarios. Even in 2030, over 40,000 Barbadians would be between 5 and 14—more than double the number there would be if migration remains at current levels. The impact of emigration on school enrollments is enormous. In all instances, a decline in the number of children in school can be expected primarily because of continued low fertility in the future, but variations in migration will affect that number considerably.

Labour Force: The future employment demands of a growing labour force are not a cause of optimism. Based on labour force participation rates developed for Barbados by the International Labour Office, the total number of people working or looking for a job was estimated at about 103,000 in 1980. Under all four scenarios developed for this report a significant number of new jobs will have to be created in this and the next decade simply to maintain current employment levels. (See Figure 4; for supporting data, see Appendix Table F.)

Figure 3: School-Age Population (5–14) in Barbados, 1980–2030



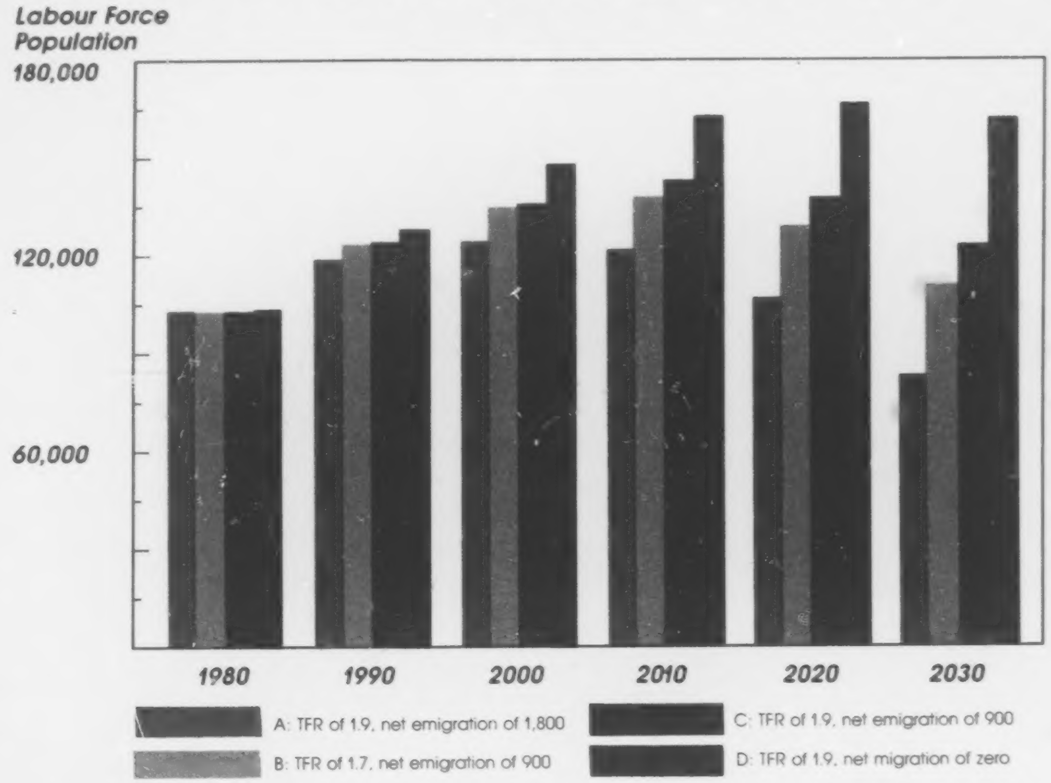
Under Scenario A, for example, some 15,000 jobs would have to be created between now and 1990 and an additional 5,000 jobs between 1990 and 2000. If emigration is cut in half, 20,000 new jobs would be needed in this decade and 12,500 in the next. Even with lower fertility, a similar number of jobs would be needed between now and the turn of the century. Without any migration, demand for jobs would soar—45,000 new ones would be needed by 2000. If unemployment remains at the currently reported level of 14.7 percent, the number of people looking for work could grow from about 15,000 today to perhaps 18,000 in 1990 and 20,000 in 2000.

These changes over time reflect both the higher fertility of the 1960s and early 1970s and the more recent and projected very low fertility. The cohorts born between 1960 and 1975 were relatively large and will remain large as they pass thorugh their active years—that stage of life when employment is sought. On the other hand, a low fertility in the 1980s and 1990s would yield a much smaller labour force in the 21st century.

It is important to bear in mind that for the next 20 years at least these projections are quite reliable. The people who need jobs are already born; only changes in migration can substantially affect how many of them try to enter the labour force over the next few years.

The Elderly: Rarely are gerontological problems associated with developing countries. The number of elderly (here defined as 65 or older) is simply not a major concern when fertility rates are high and life expectancy, while increasing, is still relatively low. That is not the situation, however, in Barbados. Indeed, the country closely resembles the United States insofar as its future problems of an aging popula-

Figure 4: Labour Force in Barbados, 1980–2030



tion are concerned. (See Figure 5; for supporting data, see Appendix Table G.)

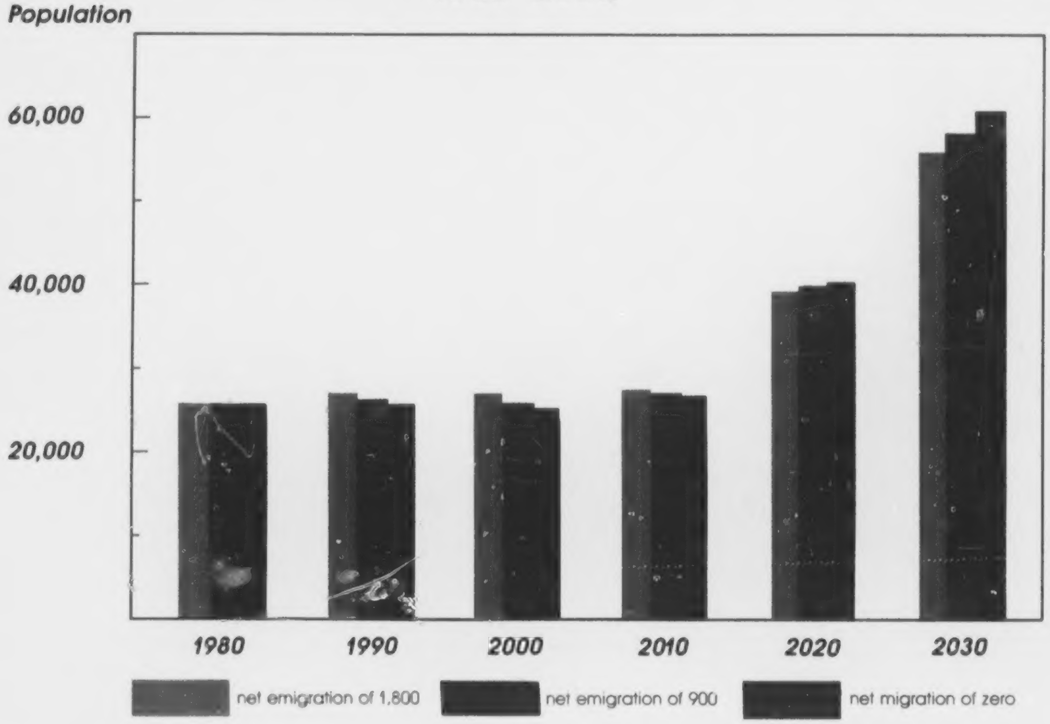
Because of high fertility in the 1950s and 1960s, the *number* of elderly Barbadians will increase dramatically around 2015; given recent and projected future very low fertility, the *proportion* of elderly in the population could grow even more dramatically in the 21st century, as noted earlier.

Looking first at the proportional contribution of the elderly to the Barbados population, in 1980 some 10.5 percent were 65 and older. That proportion will not vary much until 2015 no matter which demographic scenario occurs. Only then, 32 years from now, would the elderly represent 15 percent of the population. By 2030, the proportion could range from 18 percent (under Scenario D) to 29 percent (under Scenario A). It can be safely assumed that within 50 years close to one out of four Barbadians will be at least 65 years old, in marked contrast to the figure of one in ten today.

Numerical increases in the elderly population will be equally dramatic. There would continue to be around 26,000 people 65 or older under all scenarios through the year 2010. But by 2015 there would be about 3[illegible],000, and between 55,000 and 61,000 by the year 2030. In less than 50 years, the elderly population of Barbados could more than double.

The gerontological issues that will emerge over 30 years typify the impact of long-run demographic changes. The fertiltiy of one generation affects the population composition many years later. Statisticians and demographers who are aware of these predictable changes should inform policymakers in ample time to modify future legislation related to these issues.

Figure 5: Elderly Population (65 or Older) in Barbados, 1980–2030



Conclusion: As Barbados prepares to enter the 21st century, it is in a unique demographic situation. Although the country is considered a developing one, its population statistics all reflect the demographic behaviour of a developed nation. Yet these changes in fertility and mortality are recent, while emigration is a historically accepted fact of life. Clearly, Barbados cannot continue to grow for much longer. The current age distribution almost guarantees that school enrollments will fall over the next 20 years, that the size of the labour force will increase over the next 20 years before leveling off and then declining, and that the elderly population will grow substantially after the year 2010.

Together, the population size and age distribution will have a tremendous impact on all aspects of the economic and social life of Barbadians for the foreseeable future. If growth is to be curtailed, and even ended, in the near future, both fertility and migraiton must be kept in delicate balance.

Appendices

Table A: Population of Barbados at Census Dates, by Sex, 1844–1980

Year	Total	Male	Female
1844	122,198	—	—
1851	135,939	62,272	73,667
1861	152,727	70,799	81,928
1871	162,042	73,452	88,590
1881	171,860	77,253	94,607
1891	182,867	81,657	101,210
1911	172,337	70,577	101,760
1921	156,774	63,421	93,353
1946	193,680	86,300	107,380
1960	232,820	105,730	127,090
1970*	237,701 (235,229)	112,034 (110,470)	125,667 (124,759)
1980*	247,129 (244,228)	117,233 (115,771)	129,896 (128,457)

*Bracketed figures represent the noninstitutionalized population, on which census tabulations are based.

Table B: Mortality Indicators in Barbados, by Sex, 1920–71

Year	Infant Mortality Rates		Life Expectancy	
	Male	Female	Male	Female
1920–22	293.00	273.53	28.50	31.90
1945–47	159.15	155.47	49.17	52.94
1950–52	143.11	129.32	53.41	58.00
1959–61	77.80	65.58	62.74	67.43
1969–71	46*		65.84	70.88

*Both sexes, 1970

Table C: Current and Projected Population of Barbados, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	244,228	246,017	242,803	231,507	214,174	186,667
B	244,228	251,894	257,386	256,124	249,312	233,325
C	244,228	256,173	265,900	269,735	269,126	259,680
D	244,228	266,317	288,967	307,912	323,994	332,910

Table D: Current and Projected Population of Barbados, 1980–2030, under Alternative Scenarios

Scenario	1980	1990	2000	2010	2020	2030
E	244,228	261,926	279,962	293,167	302,050	302,650
F	244,228	241,852	234,783	219,031	196,493	163,853
G	244,228	256,757	263,593	265,232	264,274	254,298

E: TFR of 1.7, net emigration of zero
F: TFR of 1.7, net emigration of 1,800
G: TFR of 2.4, net migration of 1,800

Table E: Current and Projected School-Age Population (5–14) in Barbados, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	51,294	37,575	36,649	28,697	22,238	17,153
B	51,294	37,742	36,883	31,293	25,640	22,101
C	51,294	39,826	41,186	35,800	31,474	28,643
D	51,294	42,074	45,707	42,897	41,006	40,087

Table F: Current and Projected Labour Force in Barbados, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	103,625	118,808	123,971	121,482	107,188	83,210
B	103,625	123,870	135,447	138,291	129,597	110,822
C	103,625	123,870	136,218	142,410	137,233	122,732
D	103,625	127,878	148,459	162,922	167,231	162,163

Table G: Current and Projected Elderly Population (65 or Older) in Barbados, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	25,684	26,831	26,740	27,214	39,113	55,615
B and C	25,684	26,200	25,950	27,016	39,753	58,287
D	25,684	25,568	25,160	26,816	40,393	60,958

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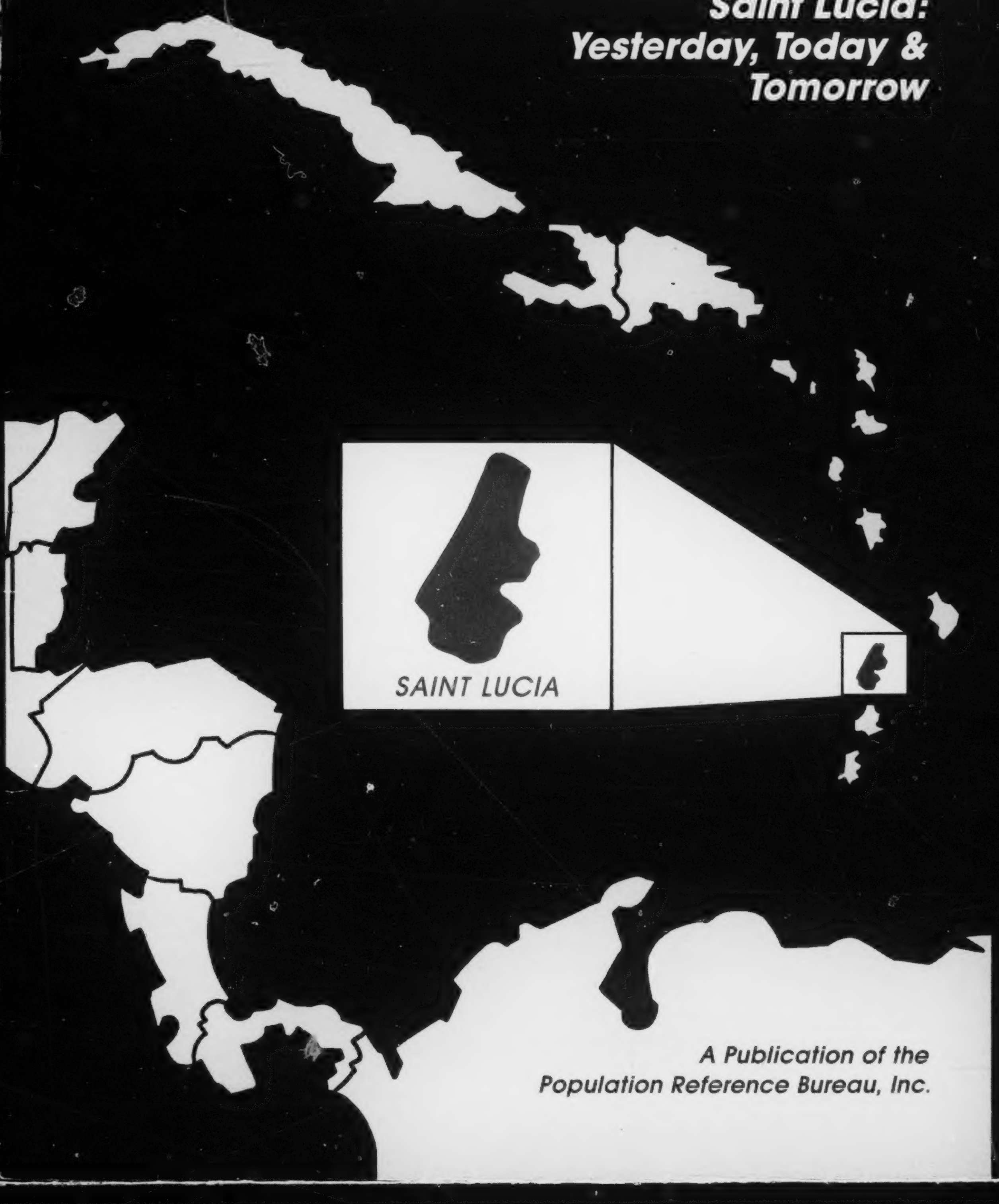
PRB OCCASIONAL SERIES: THE CARIBBEAN

Saint Lucia: Yesterday, Today & Tomorrow



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Barbados: Yesterday, Today & Tomorrow
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Belize: Yesterday, Today & Tomorrow

Saint Lucia: Yesterday, Today & Tomorrow

by Leon F. Bouvier
January 1984

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Saint Lucia: Yesterday, Today & Tomorrow

Saint Lucia Yesterday

Historically, Saint Lucia, with an area of 233 square miles, has not been considered overpopulated. In 1850, population density was a mere 15 persons per square mile; even in 1950, that density was still only 49 persons per square mile. Data for the late nineteenth century are sketchy at best, but still yield sufficient information to allow an examination of the demographic changes that have transpired over the past century and a quarter.

In 1843, a total of 20,694 persons lived in Saint Lucia, and by the time of the 1901 British Commonwealth census, the population had reached 49,883. Assuming that both censuses were comparatively accurate, this means an annual rate of growth of 1.5 percent. Given that both fertility and mortality were undoubtedly quite high (crude birth rates averaging 45 per 1,000 population and crude death rates averaging 25 per 1,000 would not be out of the ordinary for that period), some emigration must have also taken place, perhaps to such countries as British Guiana and Trinidad. An average annual net emigration rate for the period of 5 per 1,000 might well have been in effect.

Table 1: Population of Saint Lucia, 1843–1921

Year	Number
1843	20,694
1851	24,185
1861	26,674
1871	31,610
1881	38,551
1891	42,220
1901	49,883
1911	48,637
1921	51,505

Decennial censuses were undertaken from 1851 to 1921 (see Table 1) and again in 1946. There have been decennial enumerations of the population of Saint Lucia since 1960. These data allow for a fairly reliable analysis of the island's changing population from 1901 to 1960.

Population growth for the first two decades of this century was practically nonexistent. The 51,505 individuals enumerated in 1921 represented a gain of but 1,622 over the 1901 count—zero growth, for all practical purposes. Undoubtedly fertility and mortality remained high during this period. Death rates in particular must have been high especially during the 1918–20 worldwide influenza epidemic. Nevertheless, a zero rate of growth necessarily means that there was considerable emigration from the island. Interestingly, a similar pattern of no growth during the early twentieth century has been noted in other Caribbean islands. Barbados, for example, saw its population decline from 182,867 in 1891 to 156,774 in 1921. The movement of people away from the region apparently gained momentum after the turn of the century.

The 1.2 percent annual rate of growth observed between 1921 and 1946 stands in marked contrast to the situation 20 years earlier. At the 1946 census, Saint Lucia's population had reached 70,113—an increase of 18,608 over the 1921 count. The crude birth rate was 37.8 per 1,000 and the crude death rate was 15.1, yielding an annual rate of natural increase of 2.3 percent.

If this approximate rate was in effect over the 25 years preceding 1946, as is quite possible, this would indicate a continuing fairly high level of emigration of about 600 persons (net) per year. Only through such movements could the population growth rate have remained at 1.2 percent per year. By 1926, the Panama Canal had been long completed and demands for Caribbean workers had diminished. Also, the United States' quota laws of the 1920s had the effect of limiting emigration to that country. However, movements from the Caribbean to the United Kingdom may have increased, and movements from Saint Lucia to the neighbouring larger islands may also have grown.

A monumental study of population change in the Caribbean undertaken by G.H. Roberts and Jack Harewood serves as the basis for the 1946–60 population analysis.* These eminent Caribbean demographers estimated the population size and vital statistics for each English-speaking Caribbean country for every year between 1946 and 1960. (Their data for Saint Lucia are given in Appendix Tables A and B.)

Over the 14 years between 1946 and 1960, the average annual rate of growth in Saint Lucia was 1.4 percent and by the latter year the population had reached 87,350. However, a substantial proportion of that growth occurred in the first four years. Indeed, more people were added to the population between 1946 and 1950 than between 1950 and 1960. To a considerable extent this can be accounted for by changes in emigration levels. The rate of natural increase (that is, the difference between births and deaths) actually grew over the period, from 2.3 percent in 1946 to 3.4 percent in 1960. The crude birth rate, in particular, went up from 35.6 per 1,000 population in 1950 to 48.5 in 1960, while the crude death rate fell only slightly, from 15.0 to 14.6.

Net international migration, however, which was slightly positive between 1946 and 1950, turned increasingly negative after 1950. Between 1956 and 1960 net emigration amounted to 10,820 people, almost as much as the surplus of births over deaths. For the entire 1946–60 period, net emigration equaled 42 percent of natural increase. This new migration stream had the United Kingdom as its destination and were it not for this large movement away from the island, Saint Lucia's population would have soared to over 100,000 by 1960.

Between 1960 and 1970 the annual rate of population growth increased over that of the previous decade—from 0.9 percent to 1.3 percent. Fertility remained high, at about 45 per 1,000 population. The high level of people leaving the island, which apparently rose in the mid-1950s, continued through the 1960s. The countries of destination no doubt changed during the decade, however, particularly as a result of the Caribbean Immigration Act of 1962, which severely limited movements from the West Indies to the United Kingdom. On the other hand, entry requirements to the United States and Canada were eased during the 1960s and emigration to those countries began to grow (see Table 2 for U.S. data).

Table 2: Permanent Saint Lucian-Born Immigrants Admitted to the United States, 1960–79

Year	Number
1960–64	457
1965–69	773
1970–74	1,243
1975–79	2,727

The major contributor to increased population growth in the 1960s was the rapid decline in mortality. The crude death rate, estimated at 14.6 in 1960, fell to about 8.4 by 1970. The combination of continued high levels of fertility and falling mortality resulted in substantial natural increase that more than compensated for continued high levels of emigration. As a result of these variations in demographic behaviour, the population of Saint Lucia passed the 100,000 mark, for the first time in its history, in 1970.

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*G.H. Roberts and Jack Harewood, *Estimates of Intercensal Population by Age and Sex and Revised Vital Rates for British Caribbean Countries, 1946–1960* (University of West Indies, 1964).

Saint Lucia Today

According to the May 12, 1980 census of Saint Lucia (corrected for undercounts and adjusted to July 1 of that year), the population was estimated to be 120,300. This marks an increase of about 20,000 (19.2 percent) over the 100,893 enumerated in 1970, yielding an average annual rate of growth during the decade of 1.8 percent. The statistical office of Saint Lucia estimates that the population increased to about 124,000 by mid-1982, an average growth rate of 1.5 percent since 1980. As already noted, the population grew at similarly high rates before 1970—rates that are among the highest in the East Caribbean.

The size of a population can only be affected by natural increase (births minus deaths) or net migration (that is, movements either into or out of a nation). In Saint Lucia, despite a long history of net emigration, population growth rates have been surprisingly high. During the 1970s, the estimated net emigration rate was 11 per 1,000 population, according to the government's statistical office. This suggests that about 1,200–1,400 more people left the country than entered it in any given year. Using reverse projection* demographic techniques, for this report emigration has been estimated at about 1,500 per year. As decennial growth from natural increase was approximately 35,000, this lends further credence to the net emigration estimation of 15,000 for the decade. In other words, overall growth amounted to 20,000 (35,000 minus 15,000).

The birth rate fell between 1970 and 1980 from about 45 to 29.3 per 1,000. More telling is the decline in the total fertility rate (TFR), the number of live births per woman according to the age-specific rates of a particular year. In 1970 women averaged close to 6 live births; by 1980, the figure had fallen to 4.3. Although this is a significant drop, fertility is nevertheless still high by Caribbean standards. And according to the statistical office, fertility has increased since 1980, so Saint Lucia continues to have one of the highest fertility levels in the region.

Data for 1977 to 1982 (see Table 3) illustrate the recent variations in fertility rates. Between 1977 and 1980 the crude birth rate fell by 6.4 percentage points and the actual number of births also declined, despite increases in the overall population. The number of births registered in 1980 was the lowest in many years. Since then, however, rates as well as numbers have risen. By 1982, according to provisional data, the crude birth rate was 32.6 and the 3,405 births were the most recorded since the early 1970s. As a result, the TFR of 4.3 in 1980 increased to 4.7 in 1981 and to an estimated 4.9 in 1982. This unexpected increase may well be a temporary phenomenon; it is too early to arrive at a more definite conclusion.

Table 3: Crude Birth and Death Rates in Saint Lucia, 1977–82

Year	Crude Birth Rate	Crude Death Rate
	(per 1,000 population)	
1977	35.7	7.1
1978	33.5	6.7
1979	31.5	7.2
1980	29.3	6.7
1981	31.2	6.9
1982	32.6	6.6

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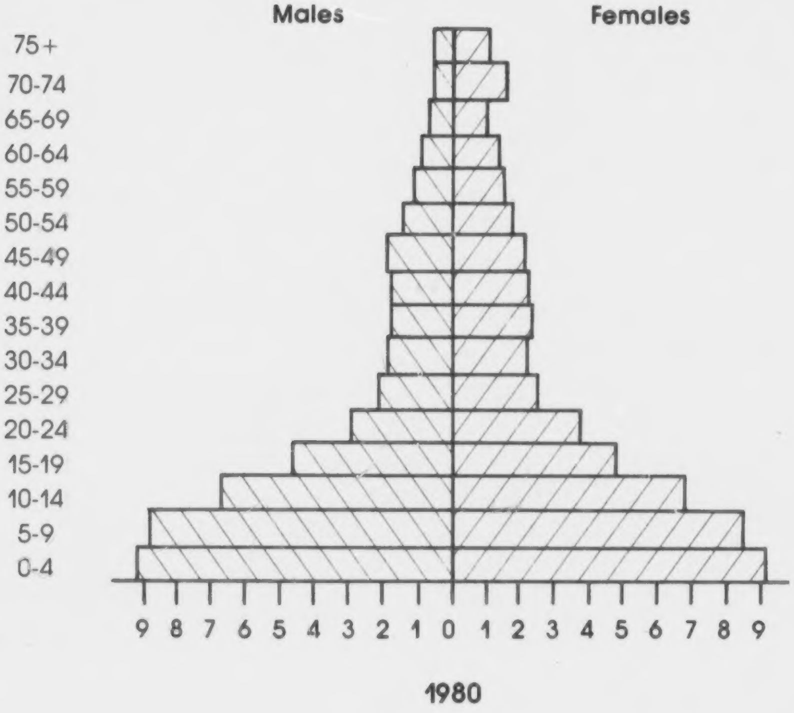
* The reverse projection method "survives" the population by age and sex backward in five-year intervals. By using appropriate survival rates, a population—males aged 45–49 in 1980, for example—can be restored to the number who would have been 40–44 in 1975 and 35–39 in 1970. Assuming relatively complete censuses in both 1970 and 1980, any differences in the age-sex distribution in 1970 between the restored and the actual enumerated population must be accounted for by either immigration or emigration. This yields only a rough estimate of the level of net migration over a decade; nonetheless it is the best available, short of actual data on migration itself.

Figure 1: Age-Sex Distribution of Saint Lucia, 1980



Progress in reducing mortality rates in Saint Lucia has been noted in recent years. The crude death rate, for example, fell from 8 to 7 per 1,000 over a decade. By 1980 life expectancy for males was 67.4 years at birth; for females, it was 71.8. In 1982, life expectancy had risen to 68.7 and 72.4, respectively, levels much more typical of developed than developing nations.

The infant mortality rate has also dropped significantly in recent years. In 1980 it was 29 per 1,000 live births, considerably lower than in 1970. Progress has apparently continued to the present day. Provisional 1982 data indicate an infant mortality rate of 22.4. The combination of a young population and considerable success in prolonging life expectancy has resulted in an extremely low crude death rate, which is expected to remain low for the foreseeable future.

As already noted, the historical pattern of net emigration continued through the 1970s. The assumption of 1,500 per year used in this report represents a rate of 12.5 per 1,000 in 1980—slightly higher than the official estimate. Although a considerable number of Saint Lucians migrate to neighbouring countries such as Martinique and Barbados, many are moving to the metropolitan nations, particularly Canada and the United States. As Table 2 indicates, the number entering the latter increased considerably in the 1970s.

Because of continued high fertility and relatively constant levels of net emigration, the population of the island did not age appreciably during the 1970s. This is in marked contrast to some other East Caribbean nations, where the median age often increased as much as four or five years in just one decade. In Saint Lucia, the median age crept up from about 15.5 in 1970 to 16.5 in 1980—where it still remains—which means the country has one of the youngest populations in the East Caribbean.

Changes in the proportional distribution by age have thus been negligible. The proportion under age 15 was 49.4 in 1970 and 49.6 in 1980 (see Figure 1). The 65-or-older group increased its share ever so slightly, from 5.1 to 5.3. The dependency ratio (the number of people under 15 and over 64 per 100 persons between those ages) was barely altered during the decade—from 120 to 122 dependents per 100 working-age individuals.

Saint Lucia's demographic future is uncertain. There is widespread agreement that the population cannot increase much more, given its growing density. Although possible, a population of 200,000 seems far too large. Yet with persistently high fertility, a doubling of the population in the not-too-distant future is quite possible, even with continued net emigration. Some means of limiting the island's population will have to be found.

Saint Lucia Tomorrow

It is not possible to make predictions about the future population of Saint Lucia, or, indeed, of any other nation. Rather, projections of future population levels are developed based on alternative assumptions about fertility, mortality, and migration. These result in a series of different scenarios that it is hoped will be of value to policymakers as they develop population-related policies for the future.

Demographic Assumptions: Three models of fertility have been selected. One keeps the fertility at its current approximate level of 4.5. Although the 1982 provisional data indicated a TFR of 4.9, it has been assumed that such a high level will not continue. A TFR of 4.5 is somewhat higher than that recorded in 1980 but lower than in 1982. The second model assumes a decline to 2.9 by 1990, after which the TFR would remain at that level. The third model assumes a replacement-level fertility of 2.1 by 1990, which is the level needed for all growth to eventually come to an end in the absence of migration.

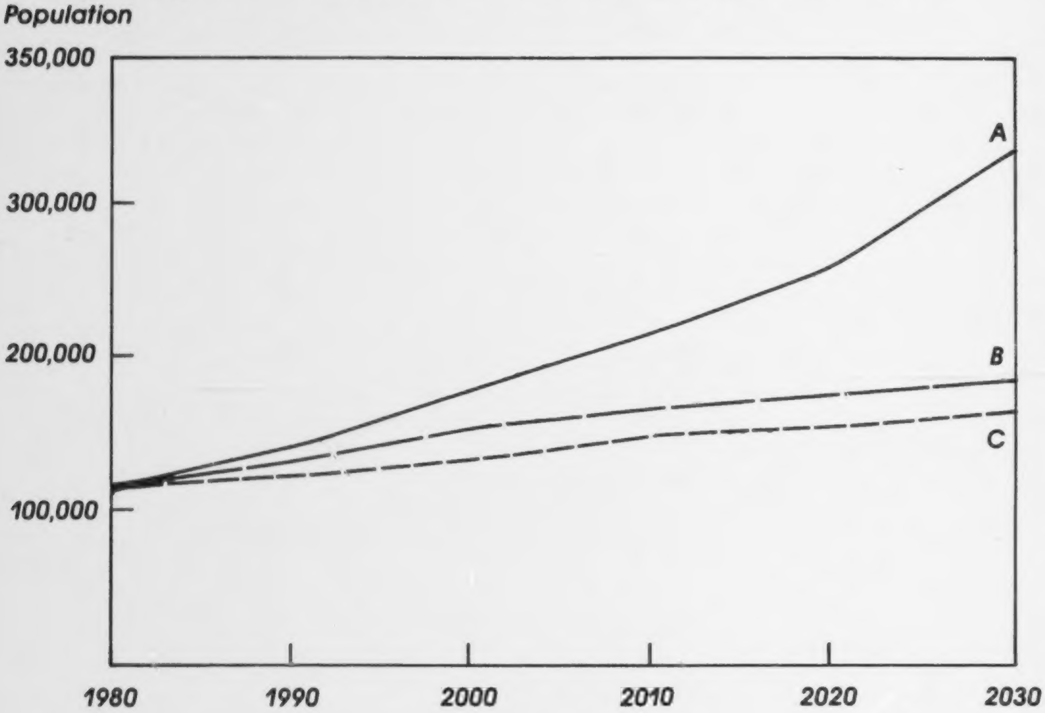
These represent substantial fertility declines in just ten years, but it is not an impossible task. It would of course require increased family planning usage on the part of Saint Lucian men and women, particularly by adolescents and young adults. In 1982, almost 30 percent of all births occurred to adolescent women, under age 20, and only about one-quarter of all women in sexual unions were using contraceptives. Reductions in adolescent fertility and increases in contraceptive use could quickly lower the birth rate.

Only one pattern of mortality levels is used. It begins with a life expectancy of 68.7 for males and 72.4 for females, the current levels according to the Saint Lucian statistical office, and assumes continued improvements until 2020, when life expectancy would be 73.9 for males and 77.5 for females. No further changes would be anticipated.

Three models of migration are used. One postulates a constant level of net emigration at the 1980 level, that is to say 1,500 per year. The second assumes that future net emigration will be halved, to 750 per year. Finally, for illustrative purposes, the third model assumes no net emigration whatsoever.

The last model—an end to emigration—is of course highly unlikely. A continuation of the current situation is very possible. However, a reduction in the number of people leaving Saint Lucia in the future is also possible. The United Kingdom has for all practical purposes been eliminated as a country of destination. Both the United States and Canada are reexamining their immigration laws. Finally, nearby receiving countries such as Barbados and Trinidad are themselves concerned about popula-

Figure 2: Population of Saint Lucia, 1980–2030



A: TFR of 4.5, net emigration of 1,500
B: TFR of 2.1, net emigration of 750
C: TFR of 2.9, net emigration of 1,500

tion growth and are increasingly reluctant to accept immigrants from neighbouring islands. A 50 percent reduction in net emigration is certainly a plausible development that must be considered.

Based on various combinations of these fertility and migration assumptions, some basic scenarios of future population growth have been constructed (see Figure 2; for supporting data, see Appendix Table C):

Scenario A – current fertility (4.5) and current net emigration (1,500 per year)

Scenario B – replacement-level fertility (2.1) and half the current level of emigration (750 per year)

Scenario C – declining fertility (2.9) and current net emigration (1,500 per year).

In addition, two scenarios with zero net emigration will be discussed briefly to illustrate the built-in momentum for growth even with replacement-level fertility, as well as with current levels of fertility.

Population Projections: A continuation of current demographic behaviour in the future (Scenario A) would lead to considerable growth. In just 16 years the population would approach 175,000, some 45 percent more than in 1980. By 2017 a doubling of numbers would have occurred and in less than 50 years, in 2030, Saint Lucia's population would top 340,000. This is what can be expected if fertility remains around 4.5, if life expectancy increases slightly, and if net emigration remains at about 1,500 per year.

Furthermore, in 2030 the crude birth rate would be 33.7 and the crude death rate 4.8. With a continued net loss through migration of 1,500 people, the actual rate of growth would then be 2.5 percent per year with no slowdown in prospect. Indeed, because of its large base population in 2030, numerical growth would become even more dramatic thereafter. Under this scenario the population in 2050 would have passed an incredible 565,000!

Such growth patterns cannot be maintained for very long. Realistically, levels of net emigration cannot be expected to remain constant. They are more likely to drop in future years. The only other reasonable solution would be to reduce fertility levels drastically.

Scenarios B and C have been prepared as possible alternative means of arriving at a zero-growth society of no more than 175,000 over the next 50 years. Scenario B illustrates the level of fertility that will be needed if net emigration levels are halved. If net emigration falls to 750 per year, it would be necessary to lower the total fertility rate to 2.1 by 1990 to ensure that the island's population does not pass 175,000 in the future. Even under this scenario, the population would still increase by some 30,000 by the turn of the century, a growth of 25 percent over 20 years. The number of Saint Lucians would peak at just over 175,000 in 2030 before beginning a slight decline.

Since a total fertility rate of 2.1 is the level needed to attain zero population growth eventually without migration, it may seem surprising that with some net emigration, growth would still occur for the next 50 years before stopping. This reflects the built-in momentum for growth in a young population. Scenario D (not shown in Figure 2, but the data are in Appendix Table C) exemplifies this well. Assuming a TFR of 2.1 and no migration, Saint Lucia would grow to 160,000 by 2000 and 220,000 by 2030. Only in 2050, with the population at 235,000, would zero growth be realized. No further change would take place after that year.

Scenario C illustrates the level of fertility needed if net emigration remains at its current estimated level of 1,500 per year. Fertility would have to fall from 4.5 to 2.9 by 1990 to assure an eventual peak population of no more than 170,000 in 2035. Increases over the next 50 years would be somewhat smaller than under Scenario B. The population at the end of the century would be approximately 145,000, and by 2030, it would be 168,000. After 2035, the growth rate would become slightly negative, resulting in 162,000 Saint Lucians at mid-century.

Just as slight differences in fertility can significantly affect future population size, so too can any change in the level of migration have considerable effect, whether more people enter or leave a region. Scenario E (not in Figure 2, but see Appendix Table C for data) considers what would happen if suddenly all migration came to an end but fertility remained at current levels. By 2000, the population would almost double to 224,000; in 2015, it would surpass 360,000; and in 2030 it would total 531,000, obviously not a viable policy option!

Scenarios B and C both appear to be reasonable options to follow if it is decided that population growth in Saint Lucia should end in the not-too-distant future at some number well below 200,000. There are, of course, other ways to combine the demographic elements of B and C and arrive at a variety of intermediate scenarios. For example, if net emigration fell to 1,000 annually, a TFR of about 2.4 would be needed to attain zero population growth below 175,000. At any rate, it is clear that if eventual population stability is desired, fertility must be drastically reduced irrespective of what occurs with emigration.

Age Distribution: The size of the future population of a country is necessarily of tremendous importance. But so, too, is its age distribution. Two nations may be of similar size and even have the same growth rates, yet they can exhibit vastly different age distributions. The impact of the latter on the society can often be as critical as the former. Whether a nation has a high proportion of young, elderly, or working-age people in its population depends on different levels of fertility, mortality, and migration.

Under Scenario A (that is, a continuation of current demographic behaviour), variations in age distribution would not be substantial, particularly after 1990 (see Table

Table 4: Percent Distribution of Population by Age-Group in Saint Lucia, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
Scenario A						
Under 15	49	42	43	42	41	41
15–64	45	51	49	51	54	54
65 or older	6	7	7	7	5	5
Scenario B						
Under 15	49	37	26	27	22	19
15–64	45	57	67	66	70	70
65 or older	6	6	7	7	8	11
Scenario C						
Under 15	49	38	32	32	28	26
15–64	45	54	59	59	64	63
65 or older	6	8	9	9	8	11

4). A slight decline in the proportion under 15 as well as among the elderly would occur, but most changes would happen in this decade. The current large proportion of youth reflects the high fertility of the past 15 years. This has resulted in a population with a median age just above 16. Beyond 1990 change would be minimal, although the dependency ratio would fall from 96 in that year to 85 by 2020, a rate still relatively high by Caribbean standards.

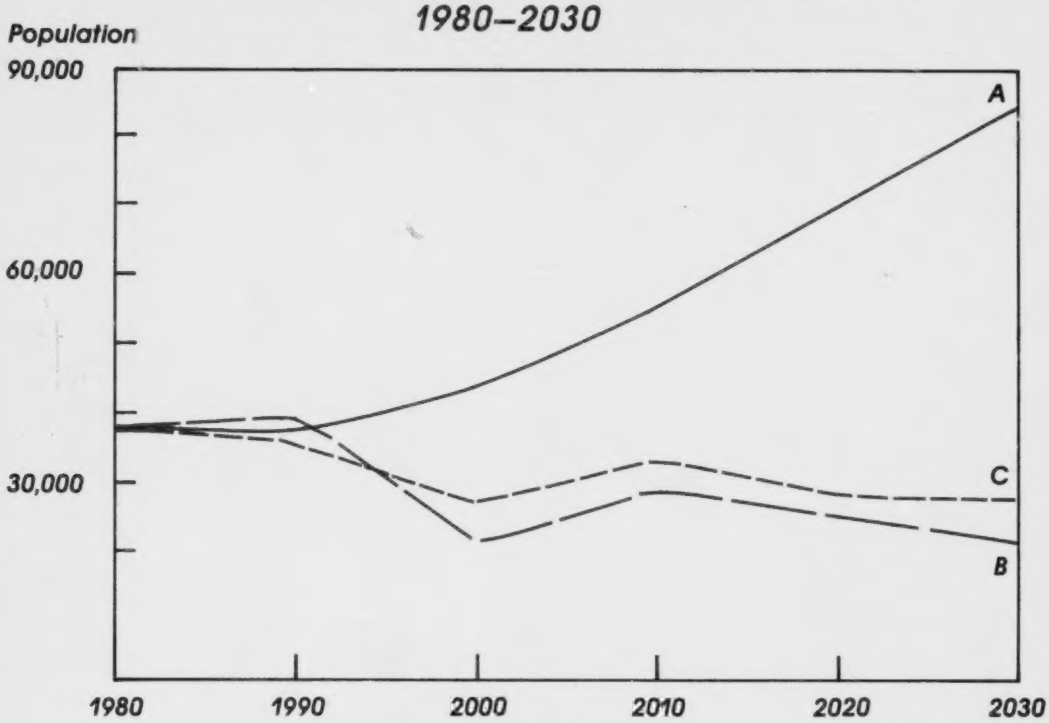
Scenarios B and C both result in a significantly older Saint Lucian population. With very low fertility of 2.1 and reduced net emigration (Scenario B), the proportion of persons under 15 in the population would fall from its present 49 percent to 26 percent in 2000 and 19 percent in 2030. The elderly population, on the other hand, would rise from 6 to 7 percent in 2000 and to 11 percent in 2030. As a result, the dependency ratio would fall dramatically. While today there are 122 persons of dependent ages per 100 working-age individuals, there would only be 49 in 2000 and but 41 in 2030. Clearly, such a scenario is encouraging for the economy of the nation.

The age distribution resulting from the demographic behaviour assumed under Scenario C (a TFR of 2.9 and current net emigration) differs slightly from that under Scenario B. The proportion of youth, while falling, would not do so as rapidly. By 2000 that proportion would be 32, and by 2030 it would be 26. The proportion of elderly would increase under Scenario C as it would under B, reaching 11 percent by 2030. The dependency ratio of Scenario C would not be quite as positive as under Scenario B, though it would be in the same direction. From 98 in 1990, the rate of dependents to working-age people would fall to 67 in 2000 and to 57 by the year 2020.

When examining the changes in age distribution that would result from these three scenarios, the situation under B seems the best, though C is also a substantial improvement over A. Surely this is to be expected. Continued high fertility (under A) necessarily leads to a high dependency ratio and to large proportions of young people, notwithstanding high levels of emigration. Thus not only does declining fertility contribute to a smaller population, it also results in a more economically manageable age distribution of that population.

Rates and proportions only depict a part of the demographic profile of the future population of Saint Lucia. For the policymaker, a much more relevant issue is what the changing proportions mean for schools, for the labour force, and for the elderly. The actual number of people

Figure 3: School-Age Population (5–14) in Saint Lucia, 1980–2030



A: TFR of 4.5, net emigration of 1,500
B: TFR of 2.1, net emigration of 750
C: TFR of 2.9, net emigration of 1,500

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there might be in various age-groups must be examined if demographic projections are to be of any value to potential users.

School Enrollment: The number of children age 5–14 (here assumed to represent the school enrollment population) could increase by about 7,400 by the turn of the century—an increase of 20 percent over 1980. Between 2000 and 2030 a near-doubling of this young population could occur, with their numbers approaching 86,000 by the latter year. All this will take place if Scenario A proves to be an accurate picture of future demographic behaviour (see Figure 3; for supporting data, see Appendix Table D). The number of school-age children would have grown from 37,595 to nearly 86,000 in just 50 years.

Educational conditions will be greatly improved if either Scenario B or C are followed. In Scenario B, where fertility falls to 2.1 and net emigration is limited to 750 per year, the population 5–14 would increase slightly in 1990 (because fewer young people would be leaving the country). Afterwards, however, their numbers would fall quite dramatically to 22,862 in the year 2000, some 15,000 less than in 1980. The slight growth that would occur in 2010 reflects the large number of women who would be in their reproductive years in the 1990–2000 decade (as a result of the high number of births prior to 1980). Thereafter the declining pattern would resume and by 2030 school enrollments (that is, children 5–14) would number less than 22,000.

With fertility at 2.9 and continued high levels of emigration (Scenario C), school enrollments would still decline in the future, although not as rapidly as in Scenario B. By the turn of the century 27,017 Saint Lucians would be between 5 and 14. After a brief increase in 2010, numbers would once again fall, to just under 28,000 by 2030.

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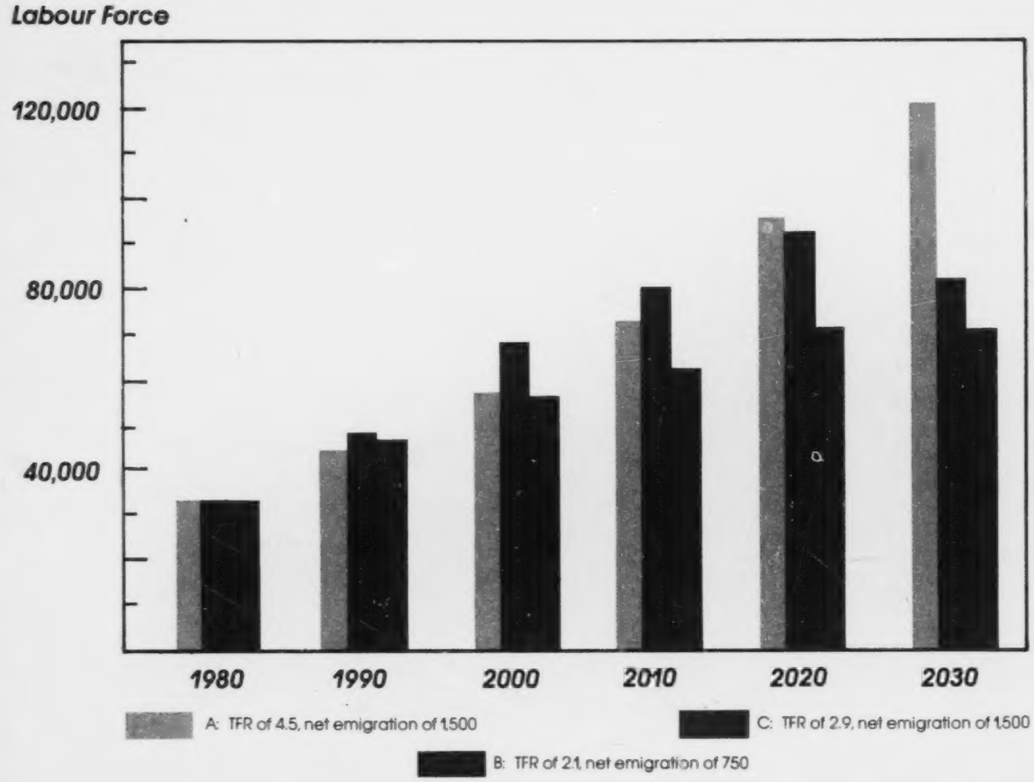
Figure 4: Labour Force in Saint Lucia, 1980–2030



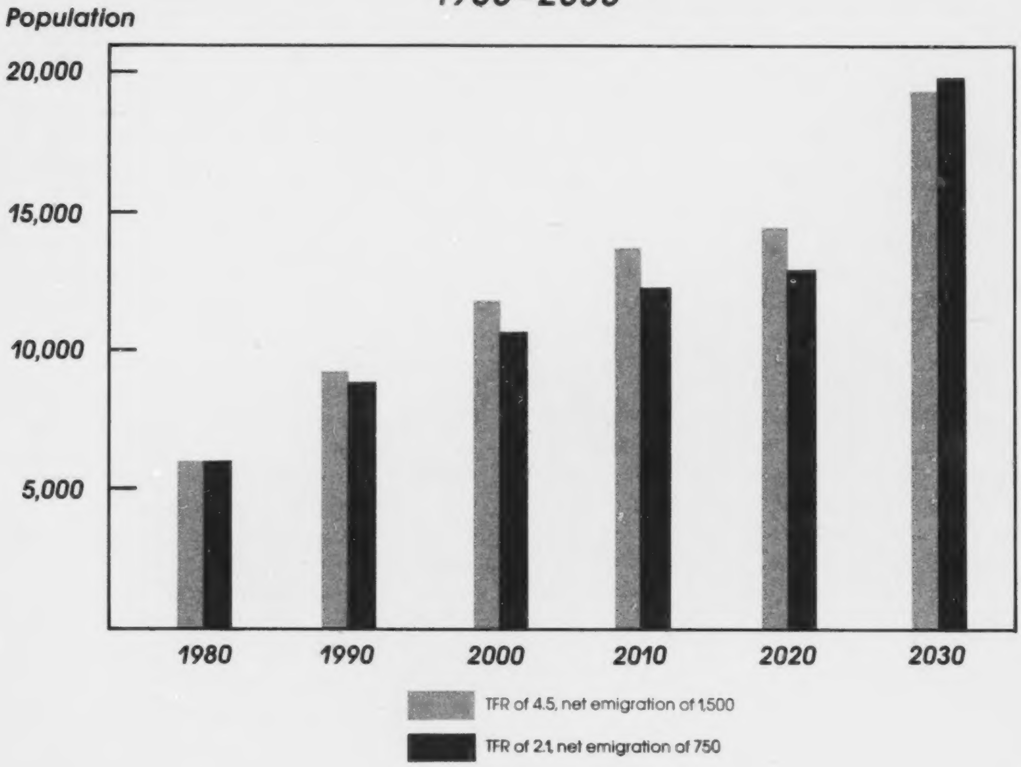
A substantial reduction in fertility would have a very strong impact on the educational system of Saint Lucia. Being able to plan for lower school enrollments within the next 15 years could not help but improve the quality of that education. Furthermore, with reduced numbers of 5–14 year olds in school, facilities could possibly be made available for increasing enrollments among older adolescents.

Labour Force: Between 1980 and 1990, some 11,000–15,000 jobs will have to be created in Saint Lucia, even allowing for a continuation of 1981's reported unemployment rate of 14.5 percent. These figures represent both the growth in the population 15 or older and changes in the labour force participation rates as projected by the International Labour Office.

Under Scenario A, by the year 2000, 58,242 people would be either working or looking for work, an increase of 23,549 (67 percent) over 1980 (see Figure 4; for supporting data, see Appendix Table E). At current unemployment levels, this would mean that some 8,500 Saint Lucians would be job hunting, usually unsuccessfully. Beyond 2000 the size of the labour force would continue to grow, to 72,000 in 2010 and 121,000 in 2030. Given that an assumption of a continuation of current demographic patterns ensures a continuation of growth, this is to be expected. However, the proportion of people in the 15–64 age-group would grow at a faster rate than that of the entire population. For example, while the total population of Saint Lucia would increase 185 percent over the next 50 years, its labour force would swell 250 percent.

In Scenario B it is assumed that net emigration will be reduced by 50 percent while fertility falls to 2.1 by the year 1990. With fewer people leaving Saint Lucia, particularly young adults, the demand for

Figure 5: Elderly Population (65 or Older) in Saint Lucia, 1980–2030



jobs would increase. Only after 2010 would the impact of lower fertility be noted among those in the labour force. Thus the labour force would grow more rapidly than under Scenario A, and by 2000 it would consist of 68,371 persons. By 2020, however, there would be nearly 94,000 job seekers or holders, slightly smaller than under Scenario A. Nevertheless, job creation will be a critical problem both immediately and later.

Scenario C (reduced fertility with current net emigration) is the most favourable path to follow as far as the labour force goes. Demands for jobs would approximate those under A until the turn of the century, when 58,174 Saint Lucians would need work. Later the demands, although still growing, would not accelerate as fast as under A or B, reflecting by then the declines in fertility that Scenario C assumes would take place after 1990.

In sum, job creation will be a critical problem in Saint Lucia for the foreseeable future regardless of fertility and migration levels. With unemployment already high, the spectre of an increase in the labour force of some 11,000–15,000 by 1990 and of 25,000–35,000 by century's end warrants serious consideration.

The Elderly: One demographic fact does not depend on which scenario is followed: Saint Lucia can plan for a vastly expanded elderly population in future years. Here what demographers refer to as the cohort effect is particularly important. The elderly of the future, at least until 2045, are already born. Thus changes in fertility will have absolutely no effect on their numbers. And since there is a tendency for elderly emigrants to return to their homeland, any reductions in overall net emigration will not significantly affect those numbers in future years. To be sure, improvements in longevity beyond those already projected would lead to even larger numbers of the elderly, but this report already assumes considerable optimism on this point.

From a total elderly population of 6,670 in 1980, the island can expect an increase of between 4,500 and 6,000 by the year 2000. And within 50 years there will be close to 20,000 St. Lucians 65 or older regardless of scenario (see Figure 5; for supporting data, see Appendix Table F). Indeed, under Scenarios D and E (assuming no net emigration) the numbers also increase to just over 20,000. Although these numerical projections can be made with considerable confidence, it is not as easy to determine what proportion of the population the elderly will represent in future years. As discussed in the section on age distribution, this could vary from 7 to 9 percent in the year 2000 and from 5 to 11 percent in 2030, depending on [illegible] patterns of fertility and migration.

Being aware now of the coming "senior boom" in Saint Lucia should be of great interest to those responsible for developing long-range plans for the nation. The expenditures related to increasing numbers of elderly are significant. However, it is important to bear in mind that, as discussed, declines in fertility will result in fewer school-age children. If the country is successful in reducing fertility, expenditures might well be transferred from education to health and care of the elderly.

Conclusion: The next 10–15 years will be critical insofar as Saint Lucia's eventual population size and related socioeconomic development are concerned. Emigration at recent levels cannot be relied upon as a means of alleviating growth problems. In fact, fertility levels are so high that even with considerable continuing emigration the population size could easily pass 200,000 in the foreseeable future. A rapid reduction in fertility is thus an important goal if the nation is to arrive at zero population growth soon. Even then the changes in age distribution could be quite disruptive. School enrollments may fall along with fertility, but labour force demands will soar no matter which fertility and migration path is followed. And after the turn of the century the elderly population will grow significantly, leading to new demands on the social support system. Rapid declines in fertility could, of course, alleviate many of the problems facing the nation as it approaches the next century. It remains to be seen if this will develop.

One thing is certain: what was once an underpopulated island is gradually becoming overpopulated. Since 1850, density has increased from 15 persons per square mile to 77 persons today and it could reach 115 in the early twenty-first century.

Appendices

Table A: Population and Crude Birth and Death Rates in Saint Lucia, 1946–70

Year	Population	Crude Birth Rate	Crude Death Rate	Rate of Natural Increase
	(number)	(per 1,000 population)		(percent)
1946	70,113	37.8	15.1	2.3
1950	79,980*	35.6	15.0	2.1
1955	86,780*	41.3	12.0	2.9
1960	87,350	48.5	14.6	3.4
1970	100,893	43.9	8.4	3.5

*End of Year Estimates

Table B: Components of Population Change in Saint Lucia, 1946–60

Year	Births	Deaths	Natural Increase	Net Migration	Population Change
1946–50*	12,910	5,650	7,260	+1,850	9,110
1951–55	15,510	5,860	9,650	−2,850	6,800
1956–60**	16,700	5,310	11,390	−10,820	570

* From April 7, 1946 to December 31, 1950

**From December 1955 to April 7, 1960

Table C: Current and Projected Population of Saint Lucia, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	120,300	140,016	173,584	213,037	267,493	341,627
B	120,300	136,633	151,038	164,491	171,906	175,540
C	120,300	131,809	144,793	156,011	163,022	168,531
D	120,300	134,978	159,829	181,988	201,579	219,490
E	120,300	159,500	224,200	307,804	423,548	531,310

A: TFR of 4.5, net emigration of 1,500
B: TFR of 2.1, net emigration of 750
C: TFR of 2.9, net emigration of 1,500
D: TFR of 2.1, net migration of zero
E: TFR of 4.5, net migration of zero

Table D: Current and Projected School-Age Population (5–14) in Saint Lucia, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	37,595	35,936	44,964	56,425	66,071	85,911
B	37,595	38,883	22,862	29,613	24,846	21,814
C	37,595	35,926	27,017	33,316	28,904	27,850

Table E: Current and Projected Labour Force in Saint Lucia, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	34,693	45,311	58,242	72,248	96,034	121,250
B	34,693	49,098	68,371	80,552	93,850	81,757
C	34,693	47,719	58,174	63,260	70,362	71,727

Table F: Current and Projected Elderly Population (65 or Older) in Saint Lucia, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A and C	6,669	9,911	12,688	13,942	14,417	19,108
B	6,669	8,782	11,079	12,470	13,606	19,925

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St. Kitts/Nevis: Yesterday, Today & Tomorrow

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St. Kitts/Nevis: Yesterday, Today & Tomorrow

by Leon F. Bouvier
February 1984

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St. Kitts/Nevis Yesterday, Today & Tomorrow

St. Kitts/Nevis Yesterday

St. Kitts/Nevis became an independent nation in September 1983. The two islands comprise the newest and one of the least populated of the world's independent countries. In examining its population history, it is important to specify precisely what islands are included in the various enumerations that have been taken since the first post-emancipation census of 1844.

That first census counted 34,927 persons living in three islands: St. Kitts, Nevis, and Anguilla (see Table 1). Until Anguilla broke away in the late 1960s (finally seceding officially in 1980), population totals for St. Kitts/Nevis were likely to include Anguilla. Since then, however, Anguilla's residents have generally been excluded from the official counts of the population of St. Kitts/Nevis. Insofar as possible, the historical statistics in this report will refer only to St. Kitts and Nevis, with Anguilla considered separately. Where this is not possible, the reader will be alerted to the variation.

The census of 1844 enumerated 32,748 people on St. Kitts/Nevis—23,177 on St. Kitts and 9,571 on Nevis. The population grew slowly for the next 50 years and peaked in 1891 at 43,963. This represented an average annual rate of growth of about 0.6 percent. After 1891, numbers began to fall and by 1921, the population of the two islands was 33,984. Thus over the three-quarters of a century after 1844, the population of St. Kitts/Nevis had only increased by 1,236—zero population growth for all practical purposes.

This was undoubtedly an era of high fertility and high, though declining, mortality. Crude birth rates were presumably in the high 40s and crude death rates in the middle 30s. Furthermore, emigration from the two islands must have been significant, particularly after 1891, as the total population declined between that year and 1921 by about 23 percent.

This pattern of growth followed by decline occurred in both islands. Nevis's population peaked in 1891 at 13,087 as did St. Kitts's (30,876). The numbers then fell to 11,569 in Nevis and to 22,415 in St. Kitts by 1921. The latter population, incidentally, was lower than in 1844! As for Anguilla, its population exhibited steady growth between 1844 and 1921. Indeed, numbers doubled over the period—from 2,179 to 4,230.

During the next quarter of a century (1921–46), rates of population growth once again increased, and by the 1946 census, 41,206 people lived on the two islands (29,818 on St. Kitts and 11,388 on Nevis)—about the same as in 1881, before the decline set in. Nevertheless, annual growth was still well below 1 percent, again suggesting considerable emigration at the same time that both fertility and mortality fell.

Throughout the nineteenth century, as well as in the early portion of the twentieth century, emigration levels were high in most smaller East Caribbean islands. Following emancipation, many former slaves migrated to the larger islands in efforts to escape their former "masters." By the turn of the century, the enticements from Panama (where the canal was being constructed), from Bermuda (where a new dock was also being built), and from the cane plantations of Cuba and the Dominican Republic led to continued emigration from St. Kitts, Nevis, and other small islands. It was not until after 1921 that this heavy migration declined somewhat and the population began to increase faster.

For the years 1946 to 1960, a study by Caribbean demographers George

Table 1: Population of St. Kitts/Nevis, 1844–1946

Year	St. Kitts	Nevis	Total, Two Islands	Anguilla	Total, Three Islands
1844	23,177	9,571	32,748	2,179	34,927
1861	24,440	9,822	34,262	2,500	36,762
1871	28,619	11,703	40,322	2,704	43,026
1881	29,137	11,864	41,001	3,219	44,220
1891	30,876	13,087	43,963	3,699	47,662
1901	29,782	12,774	42,556	3,890	46,446
1911	26,283	12,945	39,228	4,075	43,303
1921	22,415	11,569	33,984	4,230	38,214
1946	29,818	11,388	41,206	5,037	46,243

Roberts and Jack Harewood serves as the source of this report's analysis.* They estimated the population and the vital statistics for each year for each East Caribbean Commonwealth nation. Unfortunately, in the case of St. Kitts/Nevis, they also included the Anguilla population. Thus, their figure for the 1946 population totals 46,243 rather than 41,206. In 1946, Anguilla's population was 5,037 and it approached 6,000 by 1960. To allow therefore for appropriate comparisons over time, both prior to 1946 and after 1960, between 5,000 and 6,000 persons will be deducted from the Roberts-Harewood estimate to yield an estimate of the population of St. Kitts and Nevis only.

From 1946, when it was 41,206, the population of St. Kitts/Nevis increased to about 51,300 in 1960, an average annual growth rate of 1.5 percent—the highest recorded since 1844. The period was marked by continued high levels of fertility. In 1946, women past their childbearing years had averaged close to five children each. The crude birth rate was still a high 43 per 1,000 in 1960. On the other hand, mortality fell quite rapidly after World War II, in large part the result of new medical discoveries that prevented death from numerous infectious diseases. Thus, natural increase (that is, births minus deaths) was substantial.

Emigration, however, remained quite high. Roberts and Harewood estimated that it averaged around 550 per year, which was above 10 percent of the population over a decade. During the 1950s, emigration to the United Kingdom peaked. Indeed, it has been estimated that some 280,000 Caribbeans moved to the UK during that decade; a significant number undoubtedly came from St. Kitts/Nevis, as the smaller islands contributed the highest percentage of their total populations.

The spurt of population growth noted between 1946 and 1960 was of short duration. The next decade saw the number of Kittitians and Nevisians decline by some 13 percent—to 44,884. The rate of natural increase fell as birth rates declined while the already low death rates fluctuated only slightly. The crude birth rate, 43 in 1960, fell to 30 by 1970; the crude death rate, on the other hand, remained in the vicinity of 10 per 1,000.

The 1960s witnessed an incredibly large outmigration of the people of the nation—the rate has been estimated to be as high as 30 per 1,000 in some years, according to Guadalupan demographer Jean-Pierce Guengant. In 1960 and 1961, move-

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*G.H. Roberts and Jack Harewood, *Estimates of Intercensal Population by Age and Sex and Revised Vital Rates for British Caribbean Countries, 1946–1960* (University of West Indies, 1964).

ments to the UK were particularly numerous, due perhaps to the anticipation of the passage of the Commonwealth Immigration Act, which would, for all practical purposes, bar further immigration from the Caribbean. After 1962 the migration stream shifted to Canada and in particular to the U.S. Virgin Islands. (As an Associate State in the Commonwealth, St. Kitts/Nevis did not benefit from the liberalization of U.S. immigration laws in 1965. Its annual quota was only 200, later raised to 600 in 1976.) The Virgin Islands' non-native population more than doubled between 1964 and 1969, many of them coming from St. Kitts/Nevis.

Thus the 1960s—and, as discussed in the next section, the 1970s—were marked by massive movements away from the two islands, first to the United Kingdom and then to the U.S. Virgin Islands. As a result of these changes in demographic behaviour, including declining fertility, the population of St. Kitts/Nevis in 1970 (at 44,884) was approximately the same as in 1891.

St. Kitts/Nevis Today

According to the 1980 census, the population of St. Kitts/Nevis was 43,309. Thus the nation's long-time stability in numbers continues. Over the previous decade, the population fell by 1,575, which is about 3.5 percent.

This slight decline reflects the historical pattern of positive natural increase (that is, more births than deaths) being equaled and in some years exceeded by net emigration, when more people leave the country than enter it on a permanent basis. According to official government estimates, for example, natural increase for the three years from 1978 through 1980 totaled 1,952 while net emigration amounted to 1,901.

For this report, net emigration has been estimated to have been 8,000 during the decade. This is based on a reverse projection of the population from the 1980 census back to the one taken in 1970.* Admittedly, this is an estimate, and any variation in the completion rate of the censuses could affect the count. Yet given the fact that natural increase for the decade amounted to about 6,500 and that the nation's population fell by 1,575, it seems that 8,000 is a reasonable estimate of net emigration for the 1970s. This translates into the rate of 18 persons per 1,000.

Fertility fell during the 1970s. In 1970 the total fertility rate (TFR), which is the number of live births per woman according to the age-specific rates of that year, approximated 5.0. By 1980, it had fallen to about 3.6. This represents a crude birth rate of 27—somewhat lower than the 30 per 1,000 noted around 1970. The fall in the total fertility rate is quite remarkable and suggests that family planning programs are achieving some success. On the other hand, a total fertility rate of 3.6 is relatively high for such a geographically small nation. It means that St. Kitts/Nevis must rely on continued high levels of emigration to ensure that population growth does not get out of hand.

Changes in mortality were minor over the decade. The crude death rate actually rose slightly—from 9.7 to 11.0 per 1,000—but that reflects an aging population: 7.8 percent of the 1970 population were 65 or older; by 1980, 9.5 percent were that age. Age-standardization yields a lower adjusted death rate in 1980 than in 1970. It is assumed that life expectancy

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*The reverse projection method "survives" the population by age and sex backward in five-year intervals. By using appropriate survival rates, a population—males aged 45–49 in 1980, for example—can be restored to the number who would have been 40–44 in 1975 and 35–39 in 1970. Assuming relatively complete censuses in both 1970 and 1980, any differences in the age-sex distribution in 1970 between the restored and the actual enumerated population must be accounted for by either immigration or emigration. This yields only a rough estimate of the level of net migration over a decade; nonetheless it is the best available, short of actual data on migration itself.

Table 2: Permanent St. Kitts/Nevis-Born Immigrants Admitted to the United States, 1960–79

Year	Number
1960–64	853
1965–69	2,991
1970–74	1,884
1975	419
1976	650
1977	896
1978	1,014
1979	786

increased a bit during the decade, to about 64 years at birth by 1980.

As noted above, net emigration continued throughout the 1970s. According to official government statistics, the negative balance for the ten years beginning in 1967 was about 6,500. Between 1970 and 1979, a total of 5,903 persons born in St. Kitts/Nevis emigrated legally to the United States (see Table 2). A significant number also moved to the U.S. Virgin Islands or Canada.

The aging of the population of St. Kitts/Nevis was quite marked during the 1970s. Median age increased from 16 to 20 and the proportion under 15 fell from 48.7 percent in 1970 to 37 percent in 1980. Together, emigration of young people and low fertility contributed to this shift in the age structure. In addition, increases in longevity among the elderly and the return migration of older Kittitians and Nevisians led to higher proportions of older people and a higher median age.

As a result of these changes, the dependency ratio (the number of persons under 15 and over 64 per 100 persons aged 15–64) fell from 126 to 88. In 1980, therefore, there were 88 dependents per 100 working-age individuals. This remarkable decline in the dependency ratio over such a brief period shows that the burden of dependency fell because of the fertility decline and, to some extent, the continued high level of emigration. (Figure 1 illustates these changes in age distribution between 1970 and 1980.)

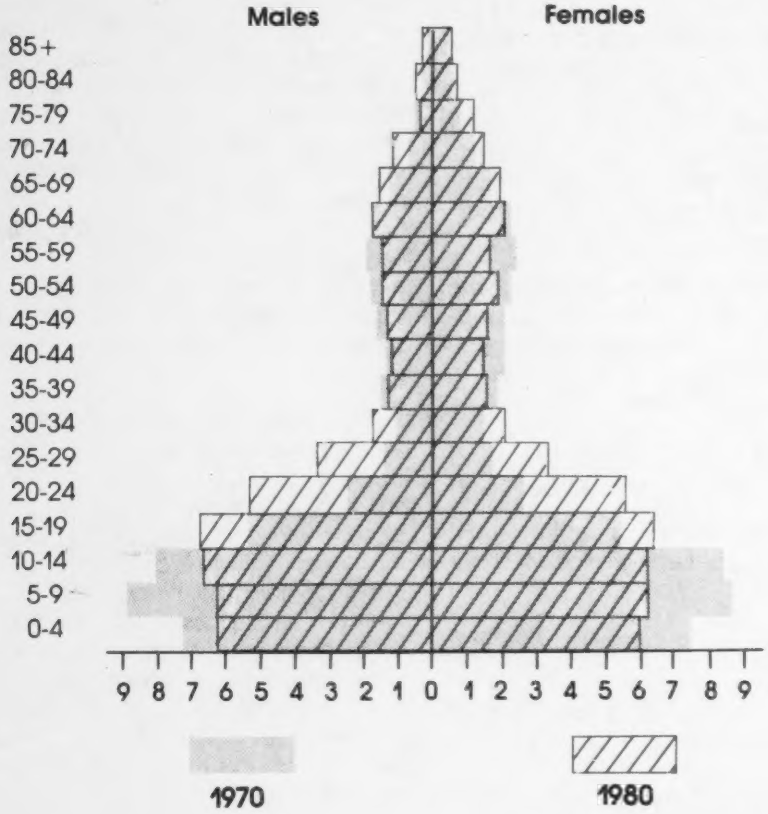
As St. Kitts/Nevis faces the future—in particular, in light of its September 1983 establishment as the world's newest independent nation—its population size is fairly stable. Indeed it is one of the few nations in the world where population size has not varied by more than 10–15 percent in either direction over the past 100 years. Such stability is important, even necessary, when population density is already high and further growth is not considered desirable. To maintain such stability, however, future demographic behaviour will have to be monitored very closely to note any change in population size or structure.

St. Kitts/Nevis Tomorrow

No attempt is made in this report to predict the future size and composition of the St. Kitts/Nevis population. Rather, alternative scenarios are created based on different assumptions concerning future fertility, mortality, and migration patterns. Policymakers are then better able to determine the impacts of variations in these variables on the future size and composition of the islands' population and, if they so desire, act accordingly.

Demographic Assumptions: Three models of fertility have been selected. One assumes that fertility remains at its current level of 3.6. Another assumes the TFR declines to 2.5 by 1990, with the age-specific fertility rates that would then prevail remaining constant thereafter. Either of these patterns could occur. On the one hand, fertility has already fallen considerably and no further decline may take place. On the other hand, with increased awareness and use of contraceptives, further declines are indeed quite possible. The third model is based on a replace-

Figure 1: Age-Sex Distribution of St. Kitts/Nevis, 1970 and 1980



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ment-fertility figure of 2.1. Such low fertility would be necessary for all growth to eventually end (in the absence of migration). It is used solely to illustrate the momentum of population growth.

Only one model of mortality trends is used. Life expectancy is assumed to increase from 63.6 for males and 67.5 for females in 1980 to 71 and 75, respectively, in 2030. Such progress seems quite likely, given the evidence of recent improvement not only in St. Kitts/Nevis but in other East Caribbean nations as well.

Three possible patterns of migration are postulated. One constitutes a maintenance of the 1970–80 level of 800 emigrants net per year; the second reduces that figure to 400 per year; the third, strictly for illustrative purposes, assumes no net movement into or out of the islands, in order to demonstrate the impact that an end of emigration would have on the islands.

A continuation of present migration levels is quite plausible. Whether these numbers will fall in the future is of course problematic, but it must be considered since the United Kingdom already restricts immigration and both the United States and Canada are presently reexamining their migration policies. This could also affect movements to the U.S. Virgin Islands.

On the other hand, the country's new independent status will result in a larger number of possible legal entries into the United States, at least under current U.S.

law. As a colony, only 600 "slots" per year were reserved for St. Kitts/Nevis. As an independent nation, it will qualify for up to 20,000 "slots" per year. This is not to say that they will be used; Kittitians and Nevisians would compete with others under the various preference levels of U.S. legislation. It can nevertheless be assumed that emigration to the United States will rise, albeit temporarily, before leveling off at some later date. Given the volatility of this temporary movement, however, this report does not consider it.

Based on various combinations of the above assumptions, four scenarios of population growth in St. Kitts/Nevis have been constructed (see Figure 2; for supporting data, see Appendix Table A):

Scenario A–current fertility (3.6) and current net emigration (800 per year)

Scenario B–declining fertility (2.5) and declining net emigration (400 per year)

Scenario C–current fertility (3.6) and net migration of zero

Scenario D–declining fertility (2.1) and net migration of zero.

The implications of these four possible patterns of fertility and migration are discussed in the remainder of this paper.

Population Projections: A continuation of current demographic behaviour in St. Kitts/Nevis (Scenario A) would result in a slight decline in population size over the next 20 years. By the year 2000 the population would be 42,022, some 3 percent below the 1980 total. In 50 years the total population would have fallen to nearly 27,800. However, it is unrealistic to assume a constant numerical level of net emigration when the overall population itself is declining. For example, the net annual emigration level of 800 yields a migration rate for 1980–85 of 18.6 per 1,000, but by 2025–30 it would yield a rate of 27.1 per 1,000. More likely, net emigration would decline somewhat after 2000 and perhaps remain at a rate of around 20 per 1,000. (This would still yield a population decline to somewhere in the vicinity of 35,000 by the year 2030.)

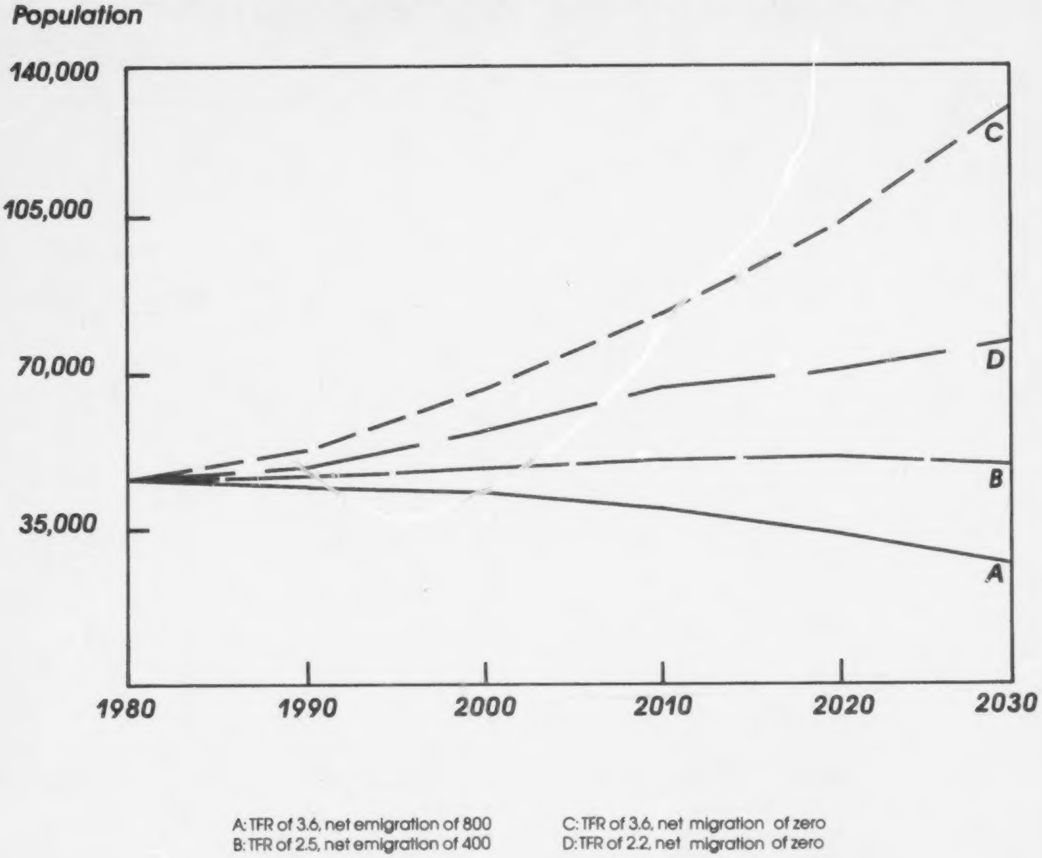
Nevertheless, a continuation of current fertility and migration levels combined with some improvement in life expectancy will result in a small decrease in numbers over the next few decades, with that decrease becoming larger later in the twenty-first century. Such a likelihood may well be perceived as favourable though it involves much of the youth leaving the islands. However, it seems quite unlikely that the migration rate will remain at 18 or 20 percent for very long. Although it may actually increase in the short run, declines are entirely possible in the twenty-first century.

To illustrate the impact of current fertility levels on the future size of the population, Scenario C was developed. It assumes that fertility remains at 3.6 and that net migration is zero after 1980. The resulting population growth is awesome. By the end of this century the population of St. Kitts/Nevis would surpass 66,000, and by 2030 it would have almost tripled to 129,000—a clearly impossible situation. Emigration from the islands will undoubtedly continue at some level in the future as it has in the past, though the number of people leaving may vary.

The question thus becomes: if net emigration is reduced, though not eliminated, what level of fertility would assure a relatively stable population of 45,000–50,000? Scenario B is one possibility. It assumes net emigration of 400 per year (half the current level) and a fertility level that falls to 2.5 by the year 1990 and remains constant thereafter. Population size would grow, albeit quite slowly, to 47,683 by the year 2000 and to 50,000 by 2015 before beginning a very slow decrease thereafter. This then appears to be the level of fertility to opt for if net emigration is halved. Any higher fertility would yield what would certainly be viewed as unacceptably large populations in the next century.

These scenarios illustrate migration's role in determining the future size of the islands' population. Yet fertility levels are also ex-

Figure 2: Population of St. Kitts/Nevis, 1980–2030



tremely important to consider when planning for the future. Scenario D shows what would happen if emigration were eliminated and fertility were reduced to 2.1—the level needed to replace any population in the long run without migration. The population of the islands would increase to 56,460 by 2000 and then to over 77,000 by 2030. In fact it would reach 82,000 before leveling off by 2050!

How can a population double in size when its fertility rate is at replacement level? There is a built-in momentum for growth in a young population. As indicated earlier, St. Kitts/Nevis has such an age distribution. Thus, the number of young people having smaller families is itself so large that the level of natural increase remains quite high for many years before it stabilizes as the society itself ages.

Variations in fertility and migration do not only affect population size, of course. Their impact on the age distribution of the population is also an important policy consideration.

Declines in fertility contribute to the aging of a population. Whenever fewer children are born, the median age rises simply because the proportion of young people in the population falls while that of the elderly goes up. Declines in emigration also contribute to some aging, as the large majority of those who leave are children and young adults. Furthermore, there is evidence of some return migration to St. Kitts/Nevis of older people.

Table 3: Percent Distribution of Population by Age-Group in St. Kitts/Nevis, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
Scenario A						
Under 15	37	35	35	29	25	20
15–64	53	56	56	63	64	55
65 or older	10	9	9	8	11	25
Scenario B						
Under 15	37	32	28	26	22	20
15–64	53	59	65	68	70	63
65 or older	10	9	7	6	8	17
Scenario C						
Under 15	37	36	38	35	34	34
15–64	53	57	57	61	62	59
65 or older	10	7	5	4	4	7
Scenario D						
Under 15	37	32	27	26	23	22
15–64	53	60	67	69	71	66
65 or older	10	8	6	5	6	12

Table 3 illustrates the changes that could take place in the age composition in future years. Looking first at the dependency ratio, if current fertility and migration patterns remain unchanged (Scenario A), dependency ratios would fall from 80 per 100 working-age persons in 1980 to 53 per 100 by 2015. A sharp rise would then follow, reflecting both the retirement of large cohorts born during the high-fertility decade of 1960–70 and the increased proportional contribution of older returning migrants. More important, however, is the short-run positive effect of fewer individuals being supported by the active population.

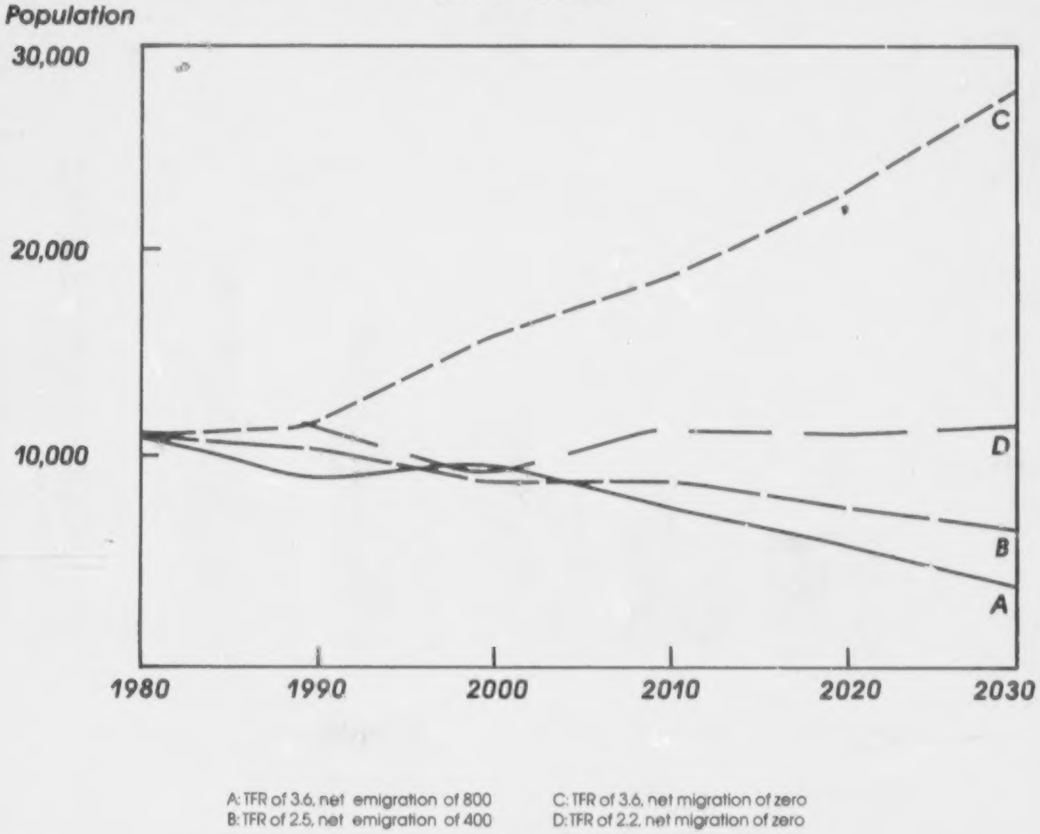
Variations in the dependency ratio would follow roughly the same pattern if fertility and net emigration were both reduced (Scenario B). The dependency ratio would fall even more, to 43 by 2020, and would not rise again to the level noted in Scenario A. Without any emigration whatsoever and with a continuation of the current fertility level (Scenario C), the dependency ratio would fall only to 61 by 2020 before rising once again.

Looking in more detail at the three major age categories, in both Scenarios A and B the proportion of youth in the total population falls over time, though somewhat more quickly with lower levels of fertility and net emigration (Scenario B). Except for the rapid increase in the number of elderly after 2020, changes in their proportion in the population are very slight. It is the active population, between 15 and 64, that increases—mostly in relation to the young group. This is true of Scenarios A and B, but, again, particularly so for Scenario B.

The pattern noted in Scenario C, when there would be no migration, is somewhat different. Although the group aged 15–64 increases, it does so more at the expense of the elderly than of the young.

These projections suggest that were it possible to select the best demographic

Figure 3: School-Age Population (5–14) in St. Kitts/Nevis, 1980–2030



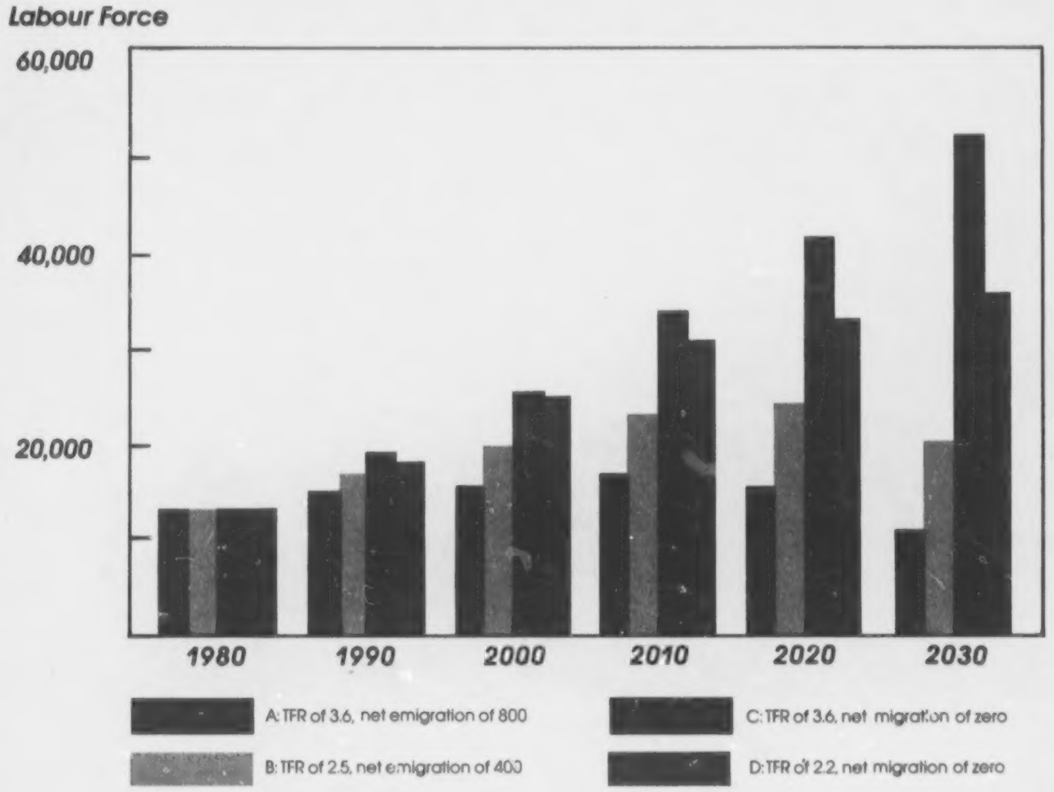
behaviour economically speaking, lower levels of both fertility and emigration would be the ideal path to follow. Not only would the total population remain around 45,000-50,000, but the age distribution would be particularly advantageous.

Changes in age distribution are demographically interesting, yet their real-world value lies in what they mean for the social and economic situation of a nation. For policymakers, the numbers behind the growth rates are more meaningful. In other words, what do changes in age distribution mean for future levels of school enrollment? How many more jobs will have to be found in the future? How many dependent elderly will there be?

School Enrollment: In this report it is assumed that everyone between the ages of 5 and 14 attends school. Admittedly, not all do and many above age 14 are still in school. Yet the 5–14 year olds serve as an adequate surrogate for school enrollment figures. From the picture painted in Figure 3 (see Appendix Table B for supporting data), it is clear that under Scenarios A and B the number of children will fall in future years. If the present levels of fertility and emigration continue (Scenario A) the number would fall from 10,886 in 1980 to 8,968 by 1990. It would then increase somewhat before declining steadily after the turn of the century. Under Scenario B the decrease would be less dramatic but steadier, falling from 10,142 by 1990 to 8,519 by the year 2000.

The situation without any emigration (Scenario C) would, however, be disastrous. The number of children aged 5–14

Figure 4: Labour Force in St. Kitts/Nevis, 1980–2030



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would grow to 15,784 by the turn of the century and would almost double in the following 30 years to nearly 28,000—a clear impossibility!

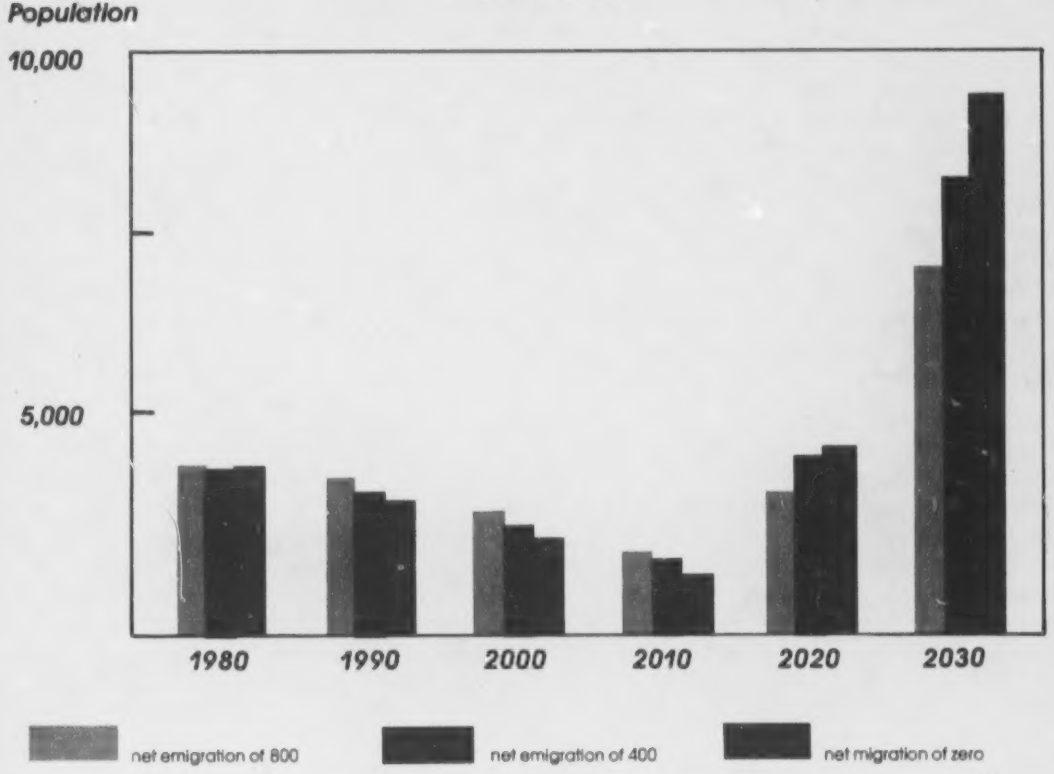
Overall, and speaking only numerically, the school situation in St. Kitts/Nevis appears quite favourable for the foreseeable future. Enrollments should decline slightly and if there are no changes in enrollment rates, this should allow for both improvements in quality as well as increases in enrollments among older youth, particularly those over age 14.

Labour Force: In this report, the International Labour Organization's projections for the Leeward Islands' rates of labour force participation have been used. Furthermore, all persons working or looking for work are included. Regardless of scenario, more jobs will have to be created for at least the next 40 years (see Figure 4; for supporting data, see Appendix Table C).

Looking first at Scenario A, in which the current high levels of net emigration are assumed to continue, over 1,600 new jobs would have to be available by 1990 and another 270 between 1990 and 2000 just to maintain the current levels of employment. (Lower fertility is irrelevant for at least the next 15 years as newborns and the very young are not part of the labour force.)

The powerful impact emigration has on the economy is exemplified in Scenario B, which assumes a halving of net emigration. Over the next 20 years some 6,600 jobs would have to be developed—about 4,700 more jobs than if net emigra-

Figure 5: Elderly Population (65 or Older) in St. Kitts/Nevis, 1980–2030



tion remained at its current level. Without any migration whatsoever (Scenario C), nearly 11,000 additional jobs would need to be created by the year 2000.

Unemployment in the two islands is currently around 15 percent. If it remains at that level, under Scenario A there would be almost 2,500 people out of work but looking for jobs by 1990, and over 2,500 unemployed by the year 2000. Under Scenario B the respective figures would be close to 2,800 and over 3,200.

Thus the overall advantages that Scenario B appears to have do not apply when examining labour force needs for the immediate future. The high level of emigration has definitely made it possible to keep the size of the labour force down; any reduction in the number of people leaving the islands will result in increased demands for jobs in St. Kitts/Nevis.

The Elderly: At the time of the most recent census there were 4,131 persons 65 or older in St. Kitts/Nevis, representing 9.5 percent of the islands' population (see Figure 5; for supporting data, see Appendix Table D). Under Scenario A the number of elderly would fall gradually until the year 2010, when it would start growing again. Similarly, under Scenario B the number of elderly would fall to about 3,000 by 2010, at which point growth would once again occur. Under the unlikely occurrence of either Scenario C or D, the number of people 65 or older would decline somewhat before increasing to over 9,000 by 2030.

The situation from 2020 onwards warrants explanation. Under all these scenarios the number of elderly would almost double between 2020 and 2030 and then remain quite large for some time thereafter. This unexpected growth reflects the large number of people born between 1955 and 1965. A glance at the 1980 population illustrates the size of that cohort. Despite significant emigration of this group after they reached the age of 10, and especially after age 15, the number of people aged 15–24 in the 1980 population (that is, those born between 1955 and 1964) is extraordinarily large—as large as the group of children under 10, a group that has not been strongly affected by emigration as yet.

Despite continued losses through emigration, and later through death, this cohort will pose special problems for St. Kitts/Nevis as it goes through with each phase of the life cycle. Prior to 1980 the schools undoubtedly felt its impact; the next ten years will see these individuals trying to enter the labour force, causing the previously noted need for additional jobs. Finally, after 2020 the individuals in that cohort will start entering their retirement years and will present other difficult problems for the nation's resources.

Conclusion: St. Kitts/Nevis is entering a new phase in its development as a nation. Politically, it is now independent; demographically, it is maintaining its no-growth population. Both politically and demographically the future is uncertain. As a result of independence, emigration from the island could actually increase, at least in the short run. On the other hand, the United States and Canada could restrict such movements under new legislation.

The new nation is among that very small group of countries that has not experienced any meaningful growth for over a century. Clearly, it cannot support many more people. Both low fertility and some emigration are needed if St. Kitts/Nevis is to remain a zero population growth nation.

Appendices

Table A: Current and Projected Population of St. Kitts/Nevis, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	43,309	42,838	42,022	39,213	34,938	27,845
B	43,309	45,670	47,683	49,283	49,754	48,165
C	43,309	52,630	66,119	82,736	103,776	128,819
D	43,309	49,721	56,460	64,082	71,397	77,241

A: TFR of 3.6, net emigration of 800
B: TFR of 2.5, net emigration of 400
C: TFR of 3.6, net migration of zero
D: TFR of 2.1, net migration of zero

Table B: Current and Projected School-Age Population (5–14) in St. Kitts/Nevis, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	10,886	8,968	9,679	7,577	5,509	3,878
B	10,886	10,142	8,519	8,541	7,314	6,383
C	10,886	11,308	15,784	18,621	22,236	27,629
D	10,886	11,308	9,646	11,114	11,015	11,070

Table C: Current and Projected Labour Force in St. Kitts/Nevis, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	14,915	16,556	16,829	17,305	15,561	11,786
B	14,915	18,446	21,527	23,681	24,066	20,433
C	14,915	20,376	25,588	34,412	43,404	52,247
D	14,915	20,200	25,578	31,280	33,942	36,169

Table D: Current and Projected Elderly Population (65 or Older) in St. Kitts/Nevis, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	4,131	4,035	3,600	3,073	3,897	6,975
B	4,131	3,940	3,432	3,002	4,145	8,105
C and D	4,131	3,845	3,267	2,931	4,394	9,235

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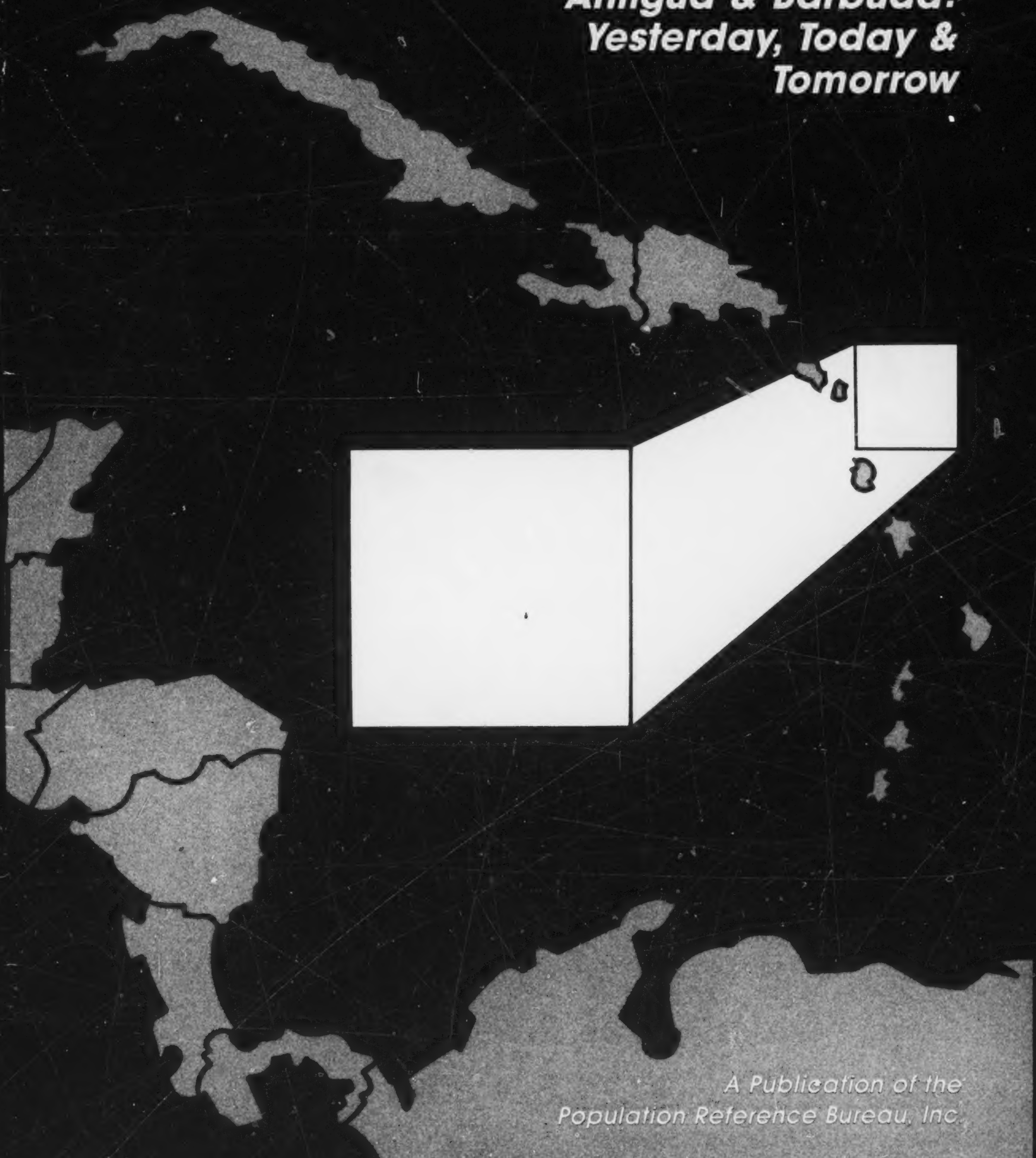

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The data used in the preparation of the population estimates and projections were selected by the author. Their use in no way suggests their acceptance as official demographic statistics by the Governments of the Eastern Caribbean.

The views expressed in these reports are those solely of the author. They do not necessarily reflect the view of USAID, CARICOM, or the respective governments.

Antigua & Barbuda: Yesterday, Today & Tomorrow

by Leon F. Bouvier
February 1984

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Antigua & Barbuda: Yesterday, Today & Tomorrow

Antigua & Barbuda Yesterday

The first post-emancipation census in Antigua and Barbuda was taken in 1844, at which time 36,687 people were enumerated, including 509 living in Barbuda. Little change occurred between 1844 and the turn of the century. Indeed, the actual population of the two islands fell to 34,971 by the time of the 1901 Census (see Table 1).

This no-growth pattern noted in many of the East Caribbean British colonies undoubtedly reflected both a low rate of natural increase and a high rate of emigration. Fertility was high, but so was mortality. Crude birth rates of 45 per 1,000 population and crude death rates of 25 or even 30 per 1,000 were no doubt quite common. Additionally, net outmigration from the two islands must have been considerable, relatively speaking.

Between 1901 and 1921, Antigua and Barbuda continued to lose population. By the latter date, the total counted in the two islands was 29,767—a decline of 5,000 since 1901. Such patterns of population loss were not uncommon in the region. With continued high levels of fertility and mortality, emigration too must have remained very high. It is quite likely that mortality, in particular, was high during the 1918–20 worldwide influenza epidemic.

Table 1: Population of Antigua and Barbuda, 1844–1946

Year	Antigua	Barbuda	Total
1844	36,178	509	36,687
1851	37,136	629	37,765
1861	36,412	713	37,125
1871	34,344	813	35,157
1881	34,321	643	34,964
1891	36,239	580	36,819
1901	34,196	775	34,971
1911	31,398	871	32,269
1921	28,864	903	29,767
1946	40,778	979	41,757

During this same period, the Panama Canal was built and demands for Caribbean labour were substantial. Movements to the larger Caribbean islands must have remained high and the construction of the Bermuda dockyards, beginning in 1900, was a particularly important stimulus for job-seekers who left Antigua and Barbuda.

A dramatic change in population growth patterns took place after 1921. By the time of the 1946 census, the population of Antigua and Barbuda had grown to 41,757. This reflected an average annual rate of growth of 1.4 percent—by far the highest ever recorded up to that point in the nation's history.

How can such a demographic development be explained? Apparently both fertility and mortality rates fell over the 25-year period, with the latter falling more than the former. According to official statistics, births totaled 29,617 and deaths 18,441 for the total period. At the start of this 25 years, in 1921, it is assumed that these rates were high, with crude birth rates being around 40 and crude death rates around 20. By 1946, the birth rate was down to 37.0 and the death rate was 14.9 per 1,000.

At the same time, net international migration was positive, perhaps for the only time in the recorded demographic history of the nation. If the 1921 and 1946 censuses were comparatively comprehensive, net *immigration* amounted to 814 over the entire 25 years. This very small number sup-

Table 2: Population of Antigua and Barbuda and Rates of Birth, Death, and Natural Increase, 1946–70

Year	Population*	Crude Birth Rate	Crude Death Rate	Natural Increase
	(number)	(per 1,000 population)		(percent)
1946	41,760	37.0	14.9	2.2
1950	46,250	36.2	11.8	2.4
1955	51,530	36.9	10.1	2.7
1960	54,210	34.6	9.9	2.5
1970	64,794	26.0	7.5	1.8

*1946, 1960, and 1970 are census counts; 1950 and 1955 are end-of-year estimates developed by Roberts and Harewood.

ports the conclusion that net migration in fact closely approximated zero.

Such an unexpected turn of events, particularly with reference to migration, begs an explanation. Natural-born Antiguans and Barbudans perhaps returned to the islands after having lived elsewhere, such as in Panama and Bermuda; there may have been some movement to Antigua and Barbuda from neighbouring islands; finally, the extent of emigration undoubtedly dropped over that quarter-century.

As for mortality, the era was marked by substantial declines in most developing regions, not only in the Caribbean. This resulted from new cures, such as penicillin for infectious diseases, which led to meaningful declines in deaths attributable to, for example, influenza and pneumonia.

For the period 1946–60, the seminal work by Caribbean demographers George Roberts and Jack Harewood* is invaluable; they developed not only population estimates by single year but rates of fertility, mortality, and migration as well (see Table 2).

Between 1946 and 1960, Antigua and Barbuda's population grew at an average annual rate of 1.9 percent. By 1960, it had reached 54,210. The period was marked by substantial declines in mortality and slight drops in fertility. The crude death rate was 14.9 in 1946 but only 9.9 in 1960. The drop in mortality was quite remarkable. By 1960, life expectancy approached 60 years at birth—not too different from many developed nations at that time.

The crude birth rate changed during these 14 years from 37.0 to 34.6. In 1946, women who had completed their reproductive years had had, on average, 4.6 live births. This rate, the total fertility rate (TFR), fell somewhat in this period, to perhaps 4.0 by 1960.

Net emigration is estimated to have been about 3,500 between 1946 and 1960, an average of 250 per year. However, most people who left from the nation did so between 1955 and 1960, when net emigration approached 3,000. Thus, net emigration was negligible between 1946 and 1955 but increased thereafter. These movements, it can be assumed, were principally toward the United Kingdom, although a few people undoubtedly migrated to other Caribbean countries.

The 1.9 percent average annual rate of growth noted between 1946 and 1960 was maintained over the following decade; according to the 1970 census, 64,794 persons lived in Antigua and Barbuda. The demographic patterns during this decade appear to have followed those noted in the previous ten years. Fertility kept falling,

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*G.H. Roberts and Jack Harewood, *Estimates of Intercensal Population by Age and Sex and Revised Vital Rates for British Caribbean Countries, 1946–1960* (University of West Indies, 1964).

from 34.6 in 1960 to about 26.0 per 1,000 in 1970. Similarly, the crude death rate fell from 9.9 to around 7.5.

Thus natural increase remained quite high and overall population growth was only moderated by some net emigration. However, such movements were far less dramatic than those noted for other East Caribbean countries.

In sum, growth in Antigua and Barbuda was non-existent between 1844 and 1921. Indeed, the population in the latter year was lower than 80 years earlier. Between 1921 and 1970, however, the population more than doubled numerically—the result of fairly high levels of natural increase coupled with relatively low net emigration.

Antigua & Barbuda Today

No census has been taken in Antigua and Barbuda since 1970. As a result it is extremely difficult to arrive at any definitive statements about the nation's population in 1980. This report relies on both the 1970 census and the United Nations' 1980 estimate to arrive at a base population for 1980. This, in turn, allows projections to be developed of the islands' future population size and distribution.

According to the census of April 7, 1970, a total of 64,794 persons lived in Antigua (including about 1,000 on Barbuda). The U.N. estimated the population in mid-1980 was 75,200. Failing to find any evidence to the contrary, this is assumed to be the best estimate of the population as of that date. A projection of this estimate agrees with the government's figure as of July 1, 1983—77,226. These figures, over both 10 and 13 years, yield an annual average growth rate of 1.5 percent.

Between April 7, 1970, and July 1, 1980, there were about 14,000 births and 4,000 deaths in Antigua and Barbuda. This suggests that the 75,200 total developed by the U.N. reflects natural increase with virtually no net gain or loss through migration. Indeed, all informal discussions suggest that net emigration in the 1970s was relatively low in Antigua and Barbuda, although it was hardly zero. Nevertheless the U.N. estimate must be relied upon, as there is no other reliable source of information.

Fertility appears to have been quite low in Antigua and Barbuda during the last decade, although it is difficult to determine rates, given the lack of information on the total population. For example, in 1972 a total of 1,552 births were registered; therefore if indeed the total population that year was 68,000 (as the U.N. estimated), the crude birth rate then was 22.8 per 1,000. By 1977, using similar calculations, the rate was 20.4.

If the estimated total population has been exaggerated because of the failure to consider net emigration, then the crude rates were somewhat higher than indicated here. Nevertheless, it does seem quite clear that, irrespective of the size of the population, fertility was low and in fact fell from about 26.0 in 1970 to about 17.0 in 1980. The total fertility rate in 1980 has been estimated as 2.4 live births per woman, somewhat above the level needed to replace the population over the long run without migration.

Mortality, too, was reduced during the 1970s. Life expectancy in 1970 was around 62; by 1980 it appears to have been about 65 years at birth. The crude death rate also fell slightly—from 7.5 to 6.0 per 1,000 by 1980. Again, of course, these rates could vary somewhat depending on the true size of the overall population. Infant mortality also dropped in recent years—from about 40 per 1,000 live births in 1970 to 32 in 1980.

As noted above, net migration into and out of Antigua and Barbuda over the past decade may have been close to zero. A reported 5,373 residents of Antigua and Barbuda emigrated to the United States during the 1970s (see Table 3) and perhaps another 500 moved to Canada. On the other hand, the nation has become home to immigrants from neighbouring is-

Table 3: Permanent Antiguan- and Barbudan-Born Immigrants Admitted to the United States, 1960–79

Year	Number
1960–64	866
1965–69	1,535
1970–74	1,896
1975	435
1976	529
1977	835
1978	908
1979	770

lands and Guyana. It seems doubtful, however, that enough people entered the nation permanently to compensate for those leaving.

What is the exact annual net migration into or out of Antigua and Barbuda? That cannot be ascertained given the paucity of current information; for this report the U.N. estimated population of 75,200 for 1980 has been accepted, which suggests very little net migration over the decade.

Even without any net migration over the decade, the reduction in fertility as well as the improvements in life expectancy contributed to some changes in the age distribution of the population of Antigua and Barbuda (see Figure 1). In 1970, the median age was about 17 and the proportion of the population under 15 amounted to 44 percent. At the other end of the age spectrum, 5 percent of the population were elderly, that is, 65 or older.

By 1980, the median age was estimated to be 21; the proportion under the age of 15 was thought to be 32 percent and that of the elderly, 6 percent. Overall, then, the population aged slightly. This normally occurs when fertility falls, as it did in Antigua and Barbuda during the 1970s.

Such changes tend to lower the dependency ratio—that is, the number of persons of dependent ages (under 15 and over 64) per persons of active ages (15–64). In Antigua and Barbuda, this ratio appears to have changed from 96 dependents per active persons in 1970 to 62 in 1980—a remarkable decline in a relatively brief period.

Although changes in percent distribution in various age-groups are important, for policymakers the changing number of people in the respective age categories is perhaps even more relevant. For example, the number of school-age children (5–14) totaled 6,810 in 1980 according to the U.N.; in 1970, there were 18,900 children in that age-group. Again reflecting declining fertility in recent years, the school-age population has declined. On the other hand, the elderly population seems to have grown from 3,270 in 1970 to 4,417 in 1980—an increase of 35 percent in just ten years.

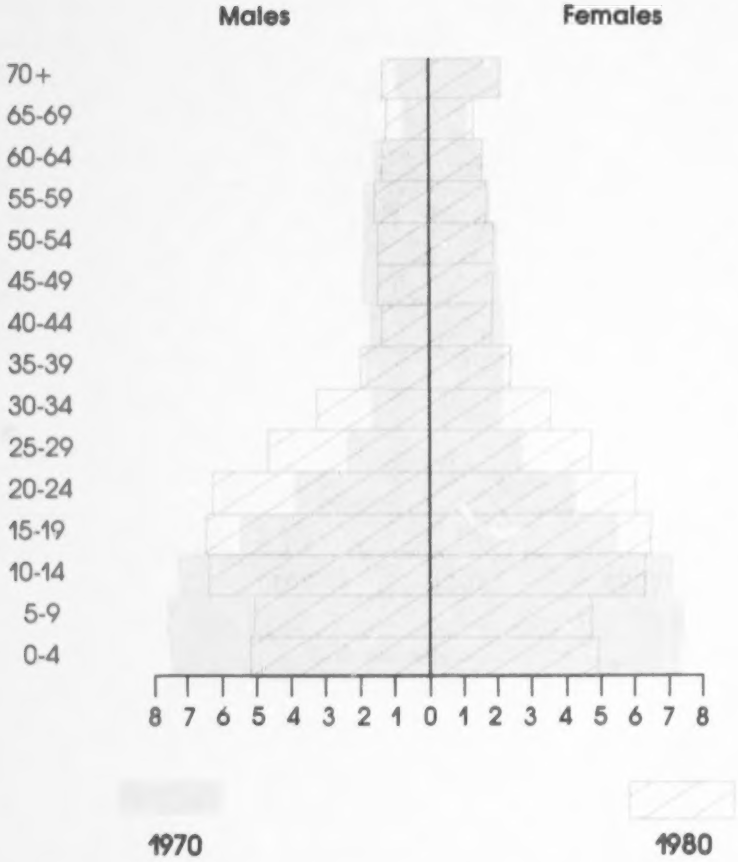
The demographic uncertainties due to the lack of a 1980 census in Antigua and Barbuda mean these statistics must all be interpreted with caution. They are approximations of reality and nothing more. Nevertheless, there seems to be some empirical evidence that fertility is falling and that life expectancy has been increasing in recent years. Net migration remains uncertain but all evidence suggests that it is not as great as that noted in some neighbouring countries, such as St. Kitts/Nevis and Dominica.

The overall rate of growth for the 1970s was still quite high, given the size of the nation and its carrying capacity. As Antigua and Barbuda faces the future, it is clear that population growth cannot continue indefinitely. How such growth can be curtailed is the main theme of the remainder of this report.

Antigua & Barbuda Tomorrow

It should be made clear that this report does not provide predictions of the future size of Antigua and Barbuda; rather, these are projections that stem from various assumptions about demographic behaviour—fertility, mortality, and migration.

Figure 1: Age-Sex Distribution of Antigua and Barbuda, 1970 and 1980

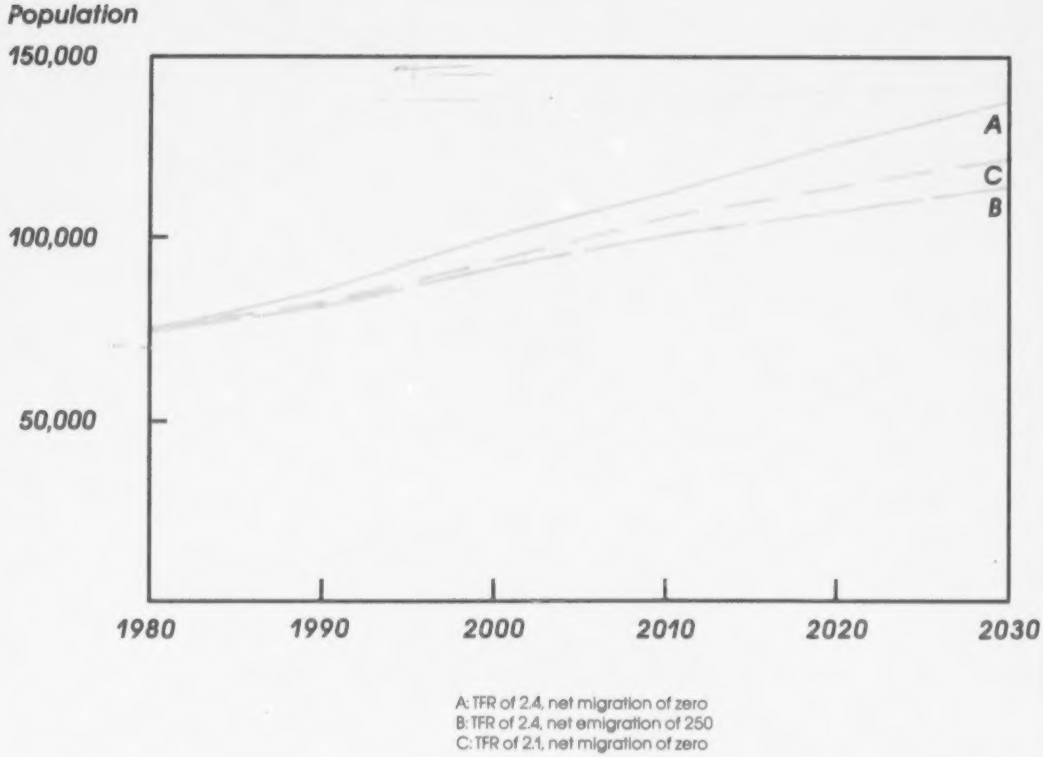


From these projections it is possible to anticipate what the population would be in the year 2000 or the year 2030, for example, if certain demographic patterns are followed. In that way policymakers will be better able to decide what steps to take, if any are deemed advisable.

Demographic Assumptions: Two patterns of fertility behaviour are projected. One extends the present level for the next 50 years. It assumes, that is, that women continue averaging 2.4 live births from now on. The other set assumes that fertility will fall to 2.1 live births per woman by 1990 and remain at that level thereafter. This is the level needed to eventually halt growth in the absence of migration. Only one set of mortality assumptions is used: that the current life expectancy of 66 years at birth for females and 63 for males will rise linearly to 75 and 71 years, respectively, by 2020 and remain at that level thereafter.

Two patterns of migration are postulated. One assumes no net migration—that is, that as many people will enter the country as leave it. The other model considers the possibility that some net emigration will occur in the future. Under this model, it is assumed that net emigration will amount to 250 per year from 1980 forward to 2030. The age distribution of these emigrants is assumed to be the same as noted for other Caribbean nations.

Figure 2: Population of Antigua and Barbuda, 1980–2030



Based on these various sets of assumptions about fertility, mortality, and migration, three alternative scenarios have been created (see Figure 2; for supporting data, see Appendix Table A):

Scenario A–current fertility (2.4) and net migration of zero

Scenario B–current fertility (2.4) and net emigration (250 per year)

Scenario C–declining fertility (2.1) and net migration of zero.

Population Projections: Under Scenario A (a continuation of current fertility and no migration), the population would grow by about 26,000 between 1980 and 2000—an increase of 35 percent in 20 years. In turn, that total of 101,248 would continue to grow to nearly 138,200 by 2030. This represents an annual rate of growth over 50 years of about 0.6 percent. By 2030, the population would have increased some 63,000—just about the number of people in Antigua and Barbuda in 1970. In 2030, under this scenario, the crude birth rate would be 16.5 and the death rate 10.6, resulting in a natural growth of 0.58 percent per year.

Clearly, such growth cannot long continue. A country as small as Antigua and Barbuda must necessarily set limits on its eventual size. Its carrying capacity is obviously quite constrained. For the purposes of this report it is assumed that an eventual population of 110,000–120,000 is a reasonable goal, by which time zero population growth should be reached.

Short of increasing mortality, an alternative not to be even considered, population growth can be limited in only two ways: through reducing fertility and/or through increasing emigration. Scenarios

B and C illustrate these alternative patterns of demographic behaviour.

Under Scenario B, fertility is assumed to remain at its current approximate level of 2.4 live births per women for the next 50 years while annual net emigration is assumed to total 250 persons. That is to say, 250 more people would leave the nation each year than would enter it. This may well approximate what could indeed transpire in future years. Growth would be substantially lower than under Scenario A. For example, at the turn of the century the population of Antigua and Barbuda would stand at about 94,000 under B, some 7,000 (7 percent) less than under Scenario A. By 2030 the population would top 112,500, at which time growth would cease, to be followed by an approximately stationary period. (Extending these assumptions 20 more years shows that in 2050 the population would be close to 111,900.) Such a pattern of demographic behaviour would meet this report's stated goal—the attainment of zero population growth at about 110,000–120,000.

If such a scenario is deemed appropriate, close monitoring of both fertility and net migration will be required. Maintaining fertility at 2.4 live births per woman is quite reasonable, given the continued and increased acceptance of family planning on the part of young Antiguan and Barbudan couples. The assumption of a low level of net emigration also appears to be quite reasonable. Indeed, it may in fact reflect the current situation, although this is not certain.

Scenario C illustrates another path to follow if zero growth is to be attained in the relatively near future. This assumes no net emigration but that the fertility level will be reduced to 2.1 live births per woman. The TFR of 2.1 has been deliberately selected because that is the level that must be reached if population stabilization is to be attained eventually, assuming no migration. In other words, each couple has, on the average, 2.1 live births. (This, rather than 2.0, is the number needed for eventual replacement because not all women live to have children and because there are always more male than female births.) Despite replacement-level fertility beginning in 1990 and no migration—in or out—to consider, the population of Antigua and Barbuda would nevertheless continue growing for some time before leveling off.

Future population sizes would be slightly larger under Scenario C than under Scenario B. By the year 2000, the nation's population would be 96,450, and by 2030 it would approach 120,000, after which no further growth would be recorded. Thus even with low fertility, Antigua and Barbuda's population would still increase by about 45,000 (59 percent) before it stopped growing in about 50 years. This somewhat perplexing situation is due to the youthful age distribution of the current population. Because there are a fairly large number of young people today, the number of births would increase until 1995 before falling once again. This is what demographers refer to as "built-in momentum."

Following the demographic behaviour suggested in Scenario C would meet the goals stated above—that is, zero growth around a population of 110,000–120,000. Furthermore it would not require any net emigration. It would, however, necessitate a reduction in fertility to 2.1. Given the fact that the fertility rate in nearby Barbados has already fallen below 2.0, such a development in Antigua and Barbuda is certainly within the realm of possibility.

As both the scenarios above meet the stated goal of ultimate population size, which is more beneficial to the nation—Scenario B or Scenario C? Of course, it is important to bear in mind that these are only models and that reality can never be as exact. More likely, some combination of B and C would be followed and result in the same ultimate zero-growth population. What is particularly important is that the goal of a population of 110,000–120,000 within the relatively near future is not an unreasonable one for Antigua and Barbuda to follow. Constant monitoring of fertility and migration is, of course, necessary.

To better consider the relative merits of

Table 4: Percent Distribution of Population by Age-Group in Antigua and Barbuda, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
Scenario A						
Under 15	32	30	28	25	24	24
15–64	62	64	66	69	67	63
65 or older	6	6	6	6	9	13
Scenario B						
Under 15	32	30	28	24	23	22
15–64	62	64	66	69	67	62
65 or older	6	6	6	7	10	16
Scenario C						
Under 15	32	28	26	23	21	20
15–64	62	66	68	71	69	65
65 or older	6	6	6	6	10	15

the various scenarios, the impact of alternative demographic behaviour on the age distribution of the nation must be examined (see Table 4). Changes in fertility, mortality, or migration that took place in the 1950s and 1960s will affect the age distribution for many decades to come.

Irrespective of scenario, the proportion of elderly in Antigua and Barbuda will increase in future years. Indeed, that proportion will go from an apparent 6 percent in 1980 to between 13 and 16 percent in 2030. To a considerable extent this change will be at the expense of the younger people in the population, who will fall as a proportion of the entire population from 32 percent in 1980 to between 20 and 24 percent in 2030. Interestingly, the so-called active population (that is, those between 15 and 64) will not change much, proportionately speaking. From being 62 percent of the population in 1980, that group will increase to around 70 percent in 2010 before falling once again to approximately its current proportion in 2030.

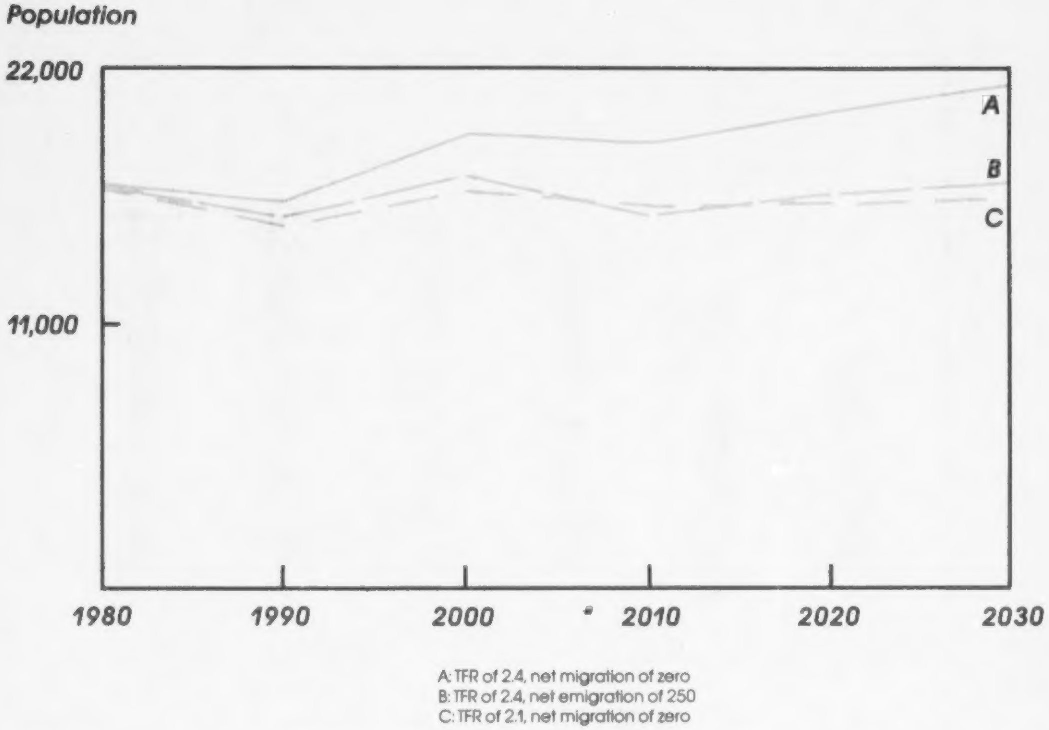
In sum, Antigua and Barbuda is aging. As noted earlier, this seems to have been the case during the recent decade and it seems bound to continue in the future. Such a situation is typical of nations exhibiting low levels of fertility and relatively low levels of migration, whether into or out of the nation.

The small projected change in the population in their active years means the dependency ratio is not expected to fluctuate widely over the next 50 years, though there will be temporary significant variations. Now 62 per 100, the ratio should be around 50 per 100 at the turn of the century and be once again approaching 60 by 2030. Because of relatively low fertility levels over the past ten years and because fertility is projected to remain low, dependency ratios in Antigua and Barbuda are far more favourable than in some other Caribbean nations.

While changing proportions of the population are of interest, as indicated earlier the changing *number* of people in various age-groups may be even more important, particularly for policymakers. Substantial variations in the number of individuals enrolled in school, looking for jobs, and 65 or older will result from changes—past, present, and future—in fertility, mortality, and migration.

School Enrollment: Despite being an ever-smaller proportion of the total population, the number of children between the

Figure 3: School-Age Population (5–14) in Antigua and Barbuda, 1980–2030



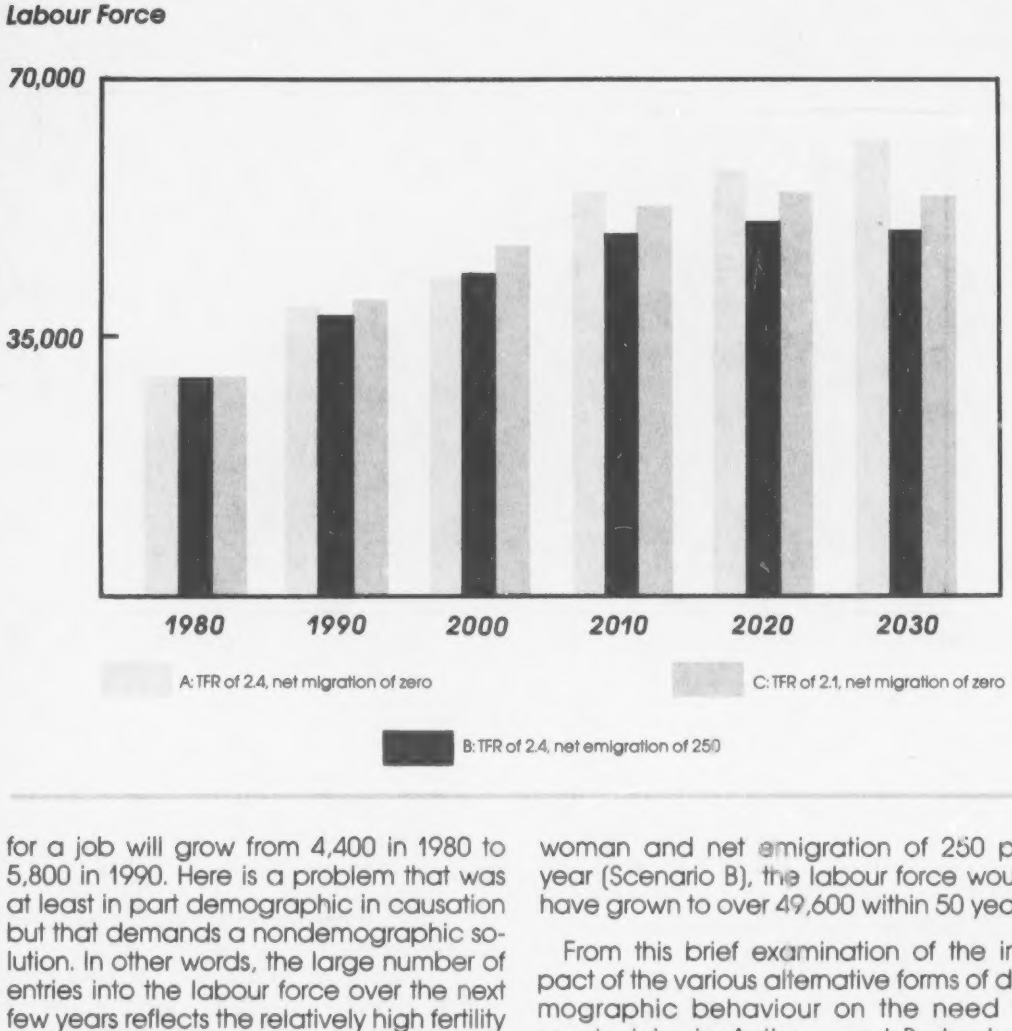
ages of 5 and 14 (the school-age group) would increase if fertility remains at 2.4 and net migration is zero (Scenario A). In 1980 there were estimated to be 16,809 persons in that age-group in the islands (see Figure 3; for supporting data, see Appendix Table B). That number would grow to 19,265 in 2000 and to nearly 21,500 by 2030 under these assumptions about demographic behaviour.

If, however, either Scenario B or Scenario C more closely approximates the demographic future, then school enrollments would hardly change at all. In both instances the number of children between 5 and 14 would peak at around 17,000 at the turn of the century and then fall ever so slightly to just above 16,000 in 2030—about the same number as in 1980. School enrollments should not, therefore, cause any major problems for the nation at least for the foreseeable future. This will be particularly true if fertility falls a little or if net emigration increases slightly.

Labour Force: For an estimate of the number of persons in the labour force between the ages of 15 and 64, the projected labour force participation rates for the East Caribbean developed by the International Labour Organization were used. The built-in momentum for growth referred to earlier in this report is especially noticeable here. Because of earlier high fertility, the number of persons between 15 and 64 will grow significantly in future years, regardless of scenario (see Figure 4; for supporting data, see Appendix Table C).

Between 1980 and 1990, some 10,000 jobs will have to be created just to maintain the current level of employment. If an unemployment rate of 15 percent is assumed, the number out of work but looking

Figure 4: Labour Force in Antigua and Barbuda, 1980–2030



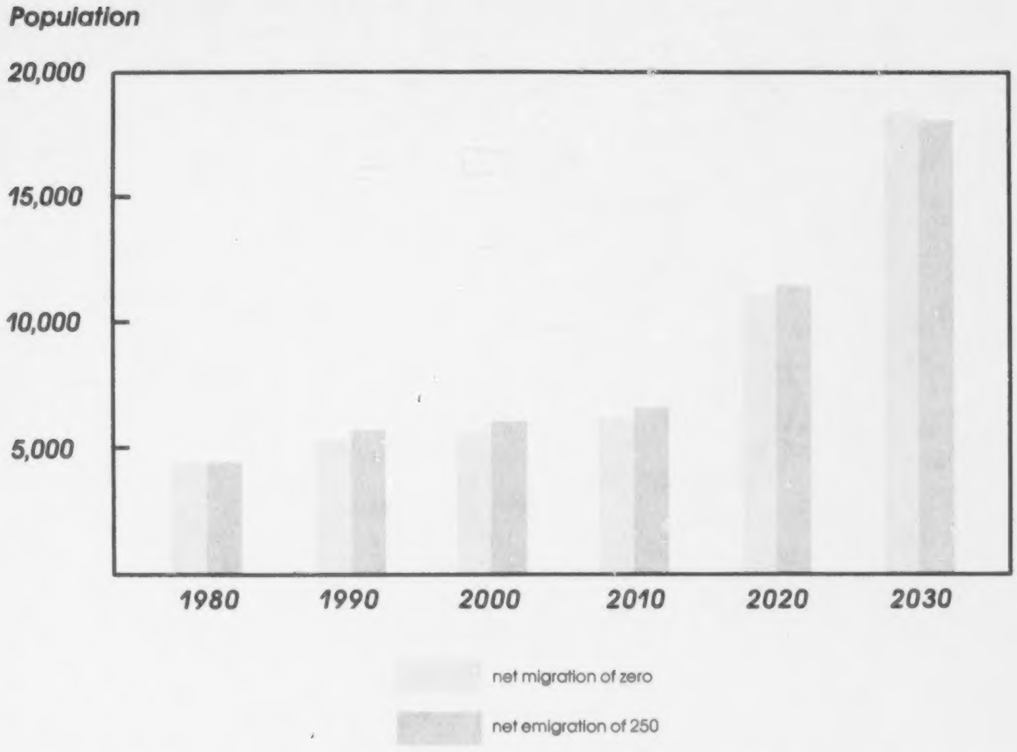
for a job will grow from 4,400 in 1980 to 5,800 in 1990. Here is a problem that was at least in part demographic in causation but that demands a nondemographic solution. In other words, the large number of entries into the labour force over the next few years reflects the relatively high fertility of 1965–75. As that cohort passes through this crucial stage of life it will prove troublesome for the economic health of the nation.

After the turn of the century, increasingly larger differences in the number of persons in the labour force would develop under the various scenarios. By 2030 the labour force would number nearly 62,000 if fertility is maintained at its present level and there is no net emigration (Scenario A), compared with 29,335 in 1980. With reduced fertility and no net emigration (Scenario C), the number would top 55,000. With continued fertility of 2.4 live births per woman and net emigration of 250 per year (Scenario B), the labour force would have grown to over 49,600 within 50 years.

From this brief examination of the impact of the various alternative forms of demographic behaviour on the need to create jobs in Antigua and Barbuda it seems that Scenario B is most suitable for the future socioeconomic health of the nation. A small number of emigrants contributes more to lowering the number of persons in the labour force than a reduced level of fertility does. Nevertheless, it is important to remember that regardless of scenario the number of individuals either working or looking for a job will grow substantially in the near future. Such a projection is sure to be correct—these people have already been born.

The Elderly: In 1980 the estimated elderly population of Antigua and Barbuda

Figure 5: Elderly Population (65 or Older) in Antigua and Barbuda, 1980–2030



was 4,418, representing 5.6 percent of the total population. Under all scenarios a massive increase in the number of elderly can be expected over the next half-century (see Figure 5; for supporting data, see Appendix Table D). (The projections of the elderly population are the same for Scenarios A and C, as in both cases there is no migration and fertility levels are irrelevant, for even in 2030 the population 65 or older would have been born prior to 1980.)

Growth will be slow at first, reaching between 5,500 and 6,100 in the year 2000. It is only after 2015 that numbers increase dramatically, to over 11,000 in 2020 and over 18,000 in 2030. Such a sudden increase reflects the high fertility in the islands before 1960. People born then will become 65 after 2020 and their numbers will pose a major problem for the society.

A similar situation exists in many other East Caribbean nations. The large cohorts born before family planning was widespread and accepted will cause problems as they go through life, culminating in the gerontological growth noted above. Thus policymakers should begin planning for a substantial increase in the number as well as the proportion of elderly in Antigua and Barbuda in about 30 years.

Conclusion: Because of the paucity of data for Antigua and Barbuda, due in large part to the failure to hold a national census in 1980, the United Nations estimates must be relied on for the base population estimate in 1980. Furthermore, total fertility rates as well as levels of migration are necessarily tentative in nature for the same reason. Nevertheless there is substantial evidence suggesting that fertility is quite low; life expectancy is fairly high and net emigration is assuredly low. Antigua and Barbuda must soon arrive at a situation of no further growth in population. A total of 120,000 people seems about as reasonable as possible, given the geographical limitations.

Such a goal can be met if fertility is lowered or if net emigration is maintained, even at a relatively low level. Irrespective of population size, however, Antigua and Barbuda soon has to face two problems directly related to past demographic behaviour—future needs for jobs and the problems associated with increasing numbers of elderly citizens.

Appendices

Table A: Current and Projected Population of Antigua and Barbuda, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	75,200	88,305	101,248	114,166	127,485	138,155
B	75,200	85,315	94,084	101,767	108,912	112,598
C	75,200	85,964	96,450	105,923	114,566	119,678

A: TFR of 2.4, net migration of zero
B: TFR of 2.4, net emigration of 250
C: TFR of 2.1, net migration of zero

Table B: Current and Projected School-Age Population (5–14) in Antigua and Barbuda, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	16,809	16,457	19,265	18,841	20,191	21,447
B	16,809	15,524	17,469	16,000	16,314	16,467
C	16,809	15,335	16,856	16,018	16,038	16,262

Table C: Current and Projected Labour Force in Antigua and Barbuda, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	29,335	39,015	42,742	54,981	57,538	61,950
B	29,335	38,057	43,374	48,871	50,401	49,634
C	29,335	39,334	47,335	52,658	55,294	55,058

Table D: Current and Projected Elderly Population (65 or Older) in Antigua and Barbuda, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A and C	4,418	5,267	5,554	6,165	11,165	18,325
B	4,418	5,653	6,091	6,663	11,454	18,108

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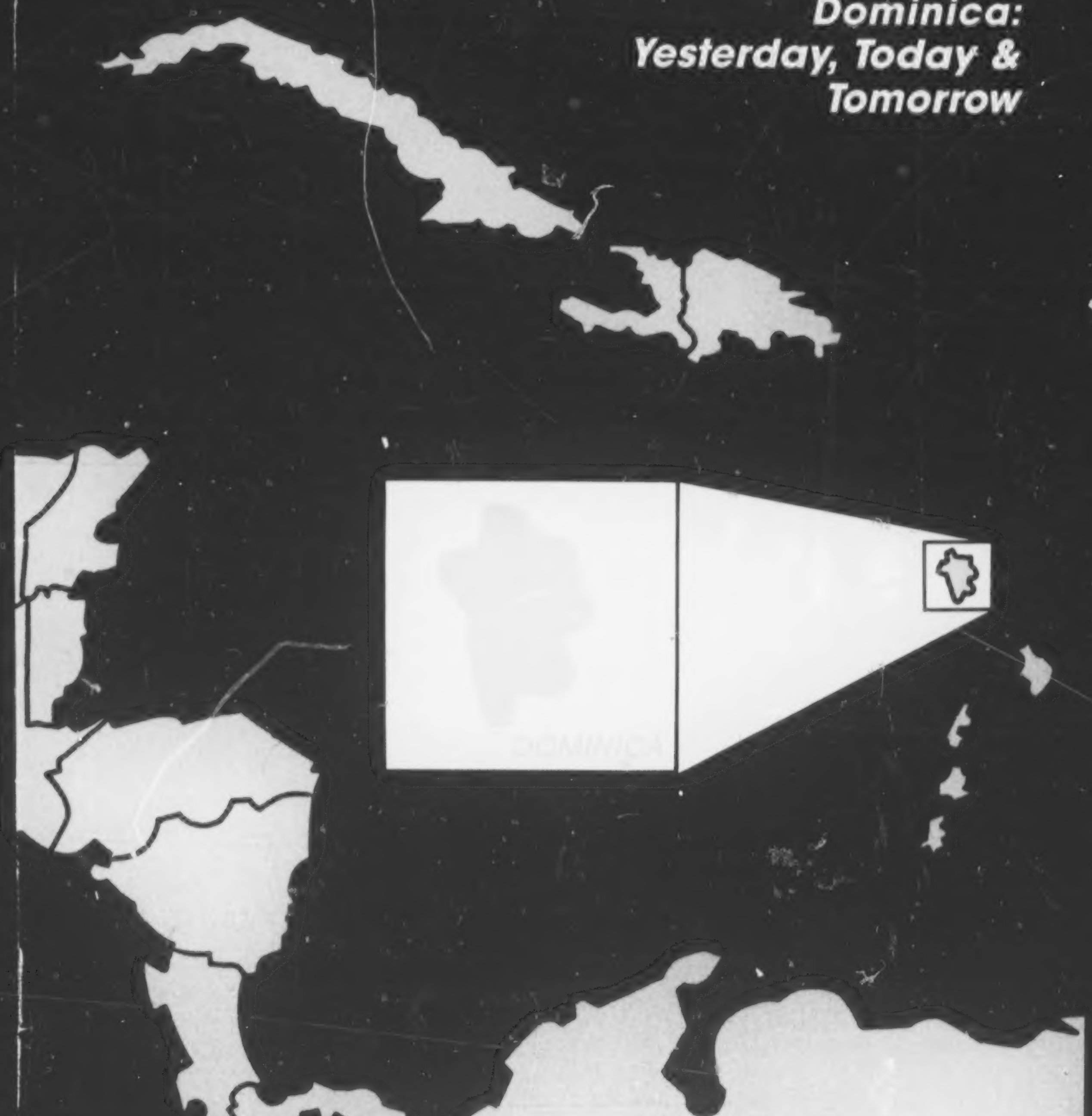

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Dominica: Yesterday, Today & Tomorrow

by Leon F. Bouvier
March 1984

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Dominica Yesterday, Today & Tomorrow

Dominica Yesterday

Somewhat over 22,000 people were enumerated when the first census following emancipation was taken in Dominica. The year was 1844. The next count was taken in 1871 and then every 10 years until 1921 (see Table 1).

Between 1844 and 1871, the population of Dominica increased to 27,178—a gain of 4,978, which was less than 0.8 percent per year. It can be assumed that natural increase was minimal. Both crude birth rates and crude death rates were undoubtedly extremely high resulting in little population growth. It is difficult to estimate levels of migration in the mid-nineteenth century, except to conclude that they probably were not substantial.

The six decennial censuses taken between 1871 and 1921 allow for a more detailed examination of the population changes on the island as the country entered the twentieth century. In 1921, the census counted 37,059 Dominicans, about 10,000 more than in 1871. This again reflected a very low average annual rate of growth—0.7 percent.

Mortality must have declined somewhat in this period, however, while fertility perhaps remained high. This was a common pattern of changing demographic behaviour in developing countries, particularly in the late nineteenth and early twentieth centuries. As a result, natural increase was probably greater than had previously been the case.

Table 1: Population of Dominica, 1844–1921

Year	Number
1844	22,200
1871	27,178
1881	28,211
1891	26,841
1901	28,894
1911	33,863
1921	37,059

Emigration, on the other hand, undoubtedly increased. Demands for foreign labour were being made particularly in Panama, where the canal was under construction. The larger islands, too, very likely seemed attractive to Dominicans seeking employment. Crude birth rates probably averaged 45 per 1,000 population, while death rates hovered around 30 per 1,000 early in the twentieth century. If approximately correct, this would mean a net emigration of some 7 per 1,000.

No censuses were taken between 1921 and 1946, although in 1931 the population of Dominica was estimated to be 39,500. By the time of the 1946 count, the nation had grown to 47,630. Over that 25-year period (1921–46), the population had increased by 10,565—an average annual rate of 1 percent. More reliable vital statistics are available for that period than for earlier years, which yields a more accurate description of what transpired demographically over this quarter of a century.

While the population grew by 10,565, there were 16,202 more births than deaths over the period. If these statistics are relatively accurate and if the censuses of 1921 and 1946 were comparable as to universality, this would indicate net emigration of 5,637 persons over the 25 years.

Crude birth rates fell from 37.6 per 1,000 population in 1921–25 to 33.1 in 1941–45. This translates into about five births per woman. Over the same period, crude death rates fell from 23.4 to 18.9 per 1,000. Actually the death rates were even lower in the 1930s—as low as 15.4.

Given this information, growth through natural increase was in the range of about 1.5 percent per year, but the actual rate of population growth was considerably lower because of emigration.

Through the first half of the twentieth century, both fertility and mortality fell substantially and net emigration increased. The changes in fertility and emigration may have been related. As men left their homes in search of work, either in the United Kingdom or in neighbouring islands like Guadeloupe and Martinique, women were left behind. This interruption of marital relationships undoubtedly contributed to the smaller family size in this period.

It should be realized that the actual number of people emigrating at one time or another was considerably greater than the 5,637 mentioned earlier. This is a net figure and some people might have immigrated to Dominica, although fewer than those who departed. Additionally, many Dominican men were temporary migrants—people who left, often for two, three, or more years, but who eventually returned.

The quality of demographic data kept improving after the 1946 census, although the next official count did not take place until 1960. Caribbean demographers George Roberts and Jack Harewood have used both censuses to develop population and vital statistics estimates for each year between 1946 and 1960 for all members of the Caribbean British Commonwealth.* Their study serves as the prime source of figures in this report for those years.

The early post-World War II period shows the annual rate of population growth in Dominica averaged about 1.6 percent—much higher than had been observed previously (see Appendix Table A). Between 1946 and 1960, the population grew from 47,630 to 59,920.

The crude birth rate actually rose from 36.2 in 1946 to 46.9 in 1960, while the crude death rate fell from 20.9 to 14.9. As a result, the rate of natural increase went up dramatically, from 1.5 to 3.2 percent. It is quite rare in a developing country for the crude birth rate to go up while the crude death rate goes down, yet this is what occurred in Dominica as women gave birth to more children—probably averaging five or six—while mortality, particularly infant mortality, fell.

For the entire 14-year period of 1946–60, a total of 30,720 births and 12,260 deaths were recorded. This natural increase of 18,460 was offset in part by net emigration of 6,190. In sum, population increased quite rapidly despite a high level of emigration because fertility rose while mortality was falling.

Between 1960 and 1970, the island's population grew by nearly another 10,000, and the number of Dominicans reached 69,549. The average annual rate of growth for that decade was once again a high 1.5 percent. Fertility levels continued to be high—the overall average crude birth rate being about 42 per 1,000. Mortality levels fell substantially by 1970; the crude death rate was 10.0 per 1,000.

As a result, natural increase—already high in the 1950s—increased in the 1960s and it was only because of massive emigration that the annual rate of growth stayed as low as 1.5 percent. In round numbers, natural increase amounted to 20,000 (26,000 births and 6,000 deaths), with a net emigration of about 10,000 over the decade.

Movements out of Dominica since 1946 were toward the neighbouring islands of Guadeloupe and Martinique as well as toward the larger islands and the metropolitan countries—the United Kingdom, Canada, and the United States. Migration to the United Kingdom almost came to a halt with the passage of the Commonwealth Immigration Act of 1962. Thereafter the United States became increasingly attractive, as did Canada. Indeed, during the 1960s, some 10 percent of the people leaving Dominica headed for the United

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*G.H. Roberts and Jack Harewood, *Estimates of Intercensal Population by Age and Sex and Revised Vital Rates for British Caribbean Countries, 1946–1960* (University of West Indies, 1964).

Table 2: Permanent Dominican-Born Immigrants Admitted to the United States, 1960–79

Year	Number
1960–64	423
1965–69	837
1970–74	1,144
1975–79	2,827

States, according to the U.S. Immigration and Naturalization Service (see Table 2).

Between 1844 and 1970, Dominica's population more than tripled, in large part due to levels of fertility that remained high throughout the period. Indeed, were it not for substantial emigration, particularly during the postwar years, Dominica's population would have easily surpassed the 100,000 mark by 1970.

Dominica Today

Among the English-speaking East Caribbean nations, Dominica was the only one to hold a census in 1981. All the others—save Antigua and Barbuda, which had no decennial enumeration whatsoever—had their censuses in April 1980. To facilitate the development of ten-year estimates and projections and to allow for more realistic comparisons with other nations, the population of Dominica as of April 7, 1980, must be estimated through the process of reverse projections.*

The 1981 census enumerated 73,795 Dominicans; for the purposes of this report, the 1980 population is estimated to have been 73,337. The level of growth subsided during the 1970s, compared with earlier decades, and thus the population change between 1970 and 1980 was small. The remainder of this section will concentrate on the changes between the 1970 census and the 1980 estimates—a ten-year interval.

Dominica's population increased by 3,788 over the decade, for an average annual rate of growth of 0.5 percent—markedly lower than that observed during the 1950s and 1960s. A major contributor was the drop in fertility. From a crude birth rate of 39.0 per 1,000 in 1970, the rate gradually fell to 25.1 in 1975 and to 21.0 in 1979. The rates for 1980 as well as 1981 were slightly higher: 24.8 and 27.6 respectively.

For this report the total fertility rate in 1980 (that is, the average number of live births per woman) is estimated to have been about 3.4. Over the most recent ten-year period for which statistics are available (1972–81), a total of 18,956 births were registered—substantially fewer than the 26,000 estimated for the 1960–69 period.

The 1970s saw the increasing acceptance of family planning on the part of Dominican couples and this undoubtedly contributed to the lower fertility. However, the particularly low crude birth rate of 21.0 noted for 1979 warrants an explanation. In that year, marked by a disastrous hurricane, hundreds of women moved to Guadeloupe, where many births to Dominicans took place. Thus this out-migration had the effect of dampening the fertility rate in Dominica.

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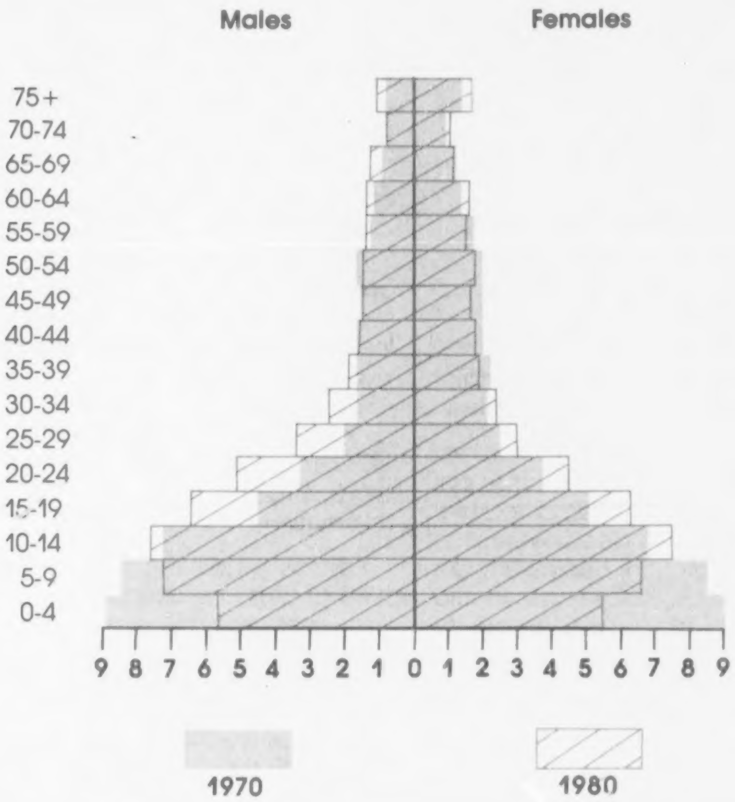
*The reverse projection method "survives" the population by age and sex backward in five-year intervals. By using appropriate survival rates, a population—males aged 45–49 in 1980, for example—can be restored to the number who would have been 40–44 in 1975 and 35–39 in 1970. Assuming relatively complete censuses in both 1970 and 1980, any differences in the age-sex distribution in 1970 between the restored and the actual enumerated population must be accounted for by either immigration or emigration. This yields only a rough estimate of the level of net migration over a decade; nonetheless it is the best available, short of actual data on migration itself.

Figure 1: Age-Sex Distribution of Dominica, 1970 and 1980



Mortality also fell during the 1970s. However, with the crude death rate already a low 10.0 in 1970, further declines were necessarily minimal. By 1980 the rate had fallen to about 6 per 1,000 and life expectancy approximated 65 years. Such a rate is remarkably low—much lower in fact than most developing nations. However, it reflects the young age composition of Dominica as much as it does its improving life expectancy.

Infant mortality rates fell particularly sharply, from 119.6 per 1,000 births in the 1950s to 67.3 in the 1960s and to 27.0 in 1977. Thus, overall, there has been great success in extending life in Dominica over the past ten years.

Emigration continued at a high level throughout the 1970s—perhaps at close to 900 per year. Indeed, some 4,000 Dominicans entered the United States during this decade. Interestingly, more women than men left the island. This is reflected in the census enumerations of 1970 and 1981. In the former year, the sex ratio was 90.1—that is, there were 90 males for every 100 females, reflecting the long-term out-migration of males over many years. By 1981, the sex ratio was 99.2. The male population increased by 3,500 over the 11 years while the female population did not grow. The reason is clear: many more women emigrated, particularly after the 1979 hurricane.

The recent decline in fertility and the changes in migration patterns have contributed to significant upheavals in the age composition of the Dominican population (see Figure 1). Its median age went from 15.4 to about 18.5 in just ten years. Although still a young population, an increase of 3 years in median age in one decade is substantial and can be attributed primarily to the rapid fall in the number of births.

In 1970, about half the Dominicans were under the age of 15; at the other extreme of the age spectrum, 5.9 percent were aged 65 or older. The dependency ratio (the number of persons of dependent age—under 15 or 65 or older—per 100 persons between 15 and 64) was a high 122. There were 20 percent more "dependent" than "active" persons.

By 1980, the age composition picture had changed considerably. Only 40 percent of the population were under 15 while 7.2 percent were 65 or older. The resulting dependency ratio was far more favourable—89 persons of dependent age per 100 of active age. This is still relatively high and reflects the fact that many persons of active age have emigrated.

A close examination of Figure 1 should cause a little wariness of these statistics. The population under 5 in 1980 amounted to 8,177, or 1,927 fewer than the 5–9 year olds. Although fertility has been falling, such a difference seems to reflect the aforementioned tendency of Dominican women to migrate to the neighbouring French islands after the disastrous 1979 hurricane and to give birth in those countries. The figures here have not been adjusted but the reader should be aware of this possibly misleading statistic.

Changes in age distribution occasionally disturb social institutions such as schools. In Dominica, however, the falling fertility of the 1970s has contributed to a stability in school enrollment. There has been but scant change in the school-age population (5–14) between 1970 and 1980.

As Dominica moves through the 1980s, its numbers approximate 75,000. Fertility has fallen considerably and the island has low mortality but emigration continues to be high. Dominica continues to have a young population. Clearly it is at a demographic crossroads. Population cannot increase much more but barriers may well be erected by receiving nations, thereby limiting emigration as a means of population control. The implications of such a development will be discussed in the next section.

Dominica Tomorrow

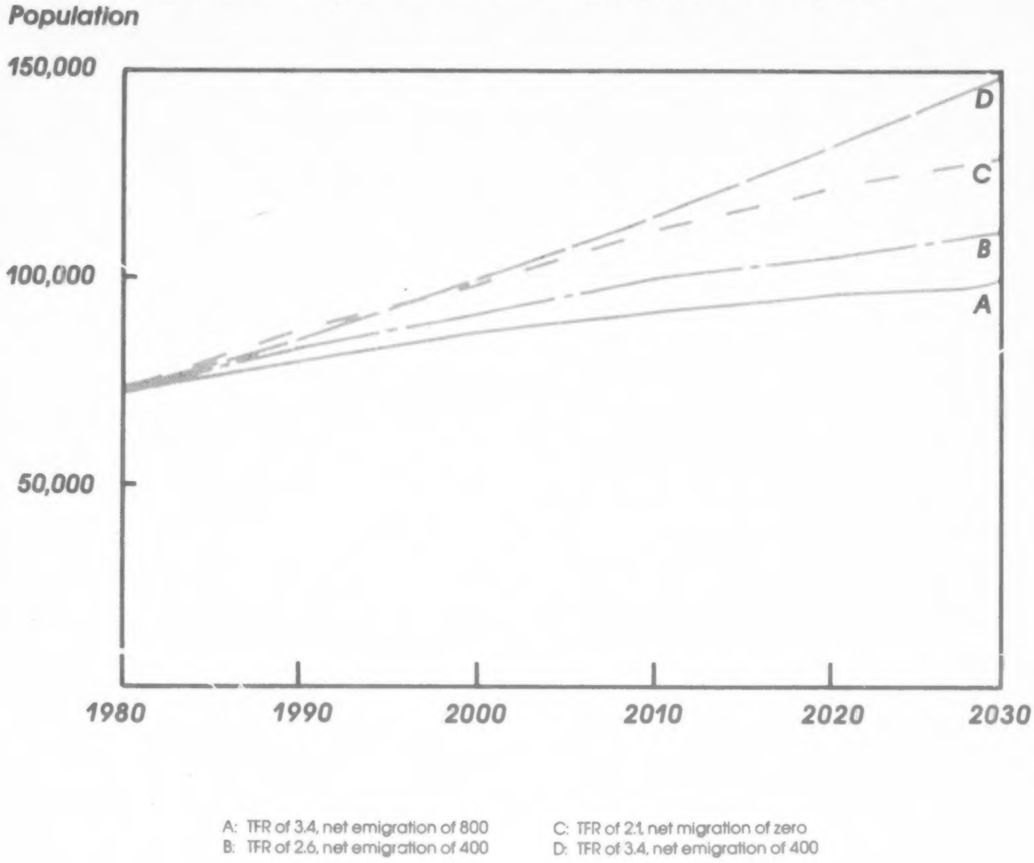
In making national plans for the future, possible changes in the population size and composition of the nation must be taken into consideration. Perhaps the following population projections for Dominica will contribute to the development of better informed social and economic planning. These are projections—not predictions—of the demographic future of the nation. This report does not attempt to predict the number and age distribution of Dominicans in any future year. Rather, it selects what appear to be reasonable or interesting alternative patterns of demographic behaviour and projects what the future size and composition of the nation would be under various combinations of such patterns.

Demographic Assumptions: Three different postulates of fertility behaviour are used. One assumes that the current total fertility rate of 3.4 will remain the same for the next 50 years. The second supposes a decline in fertility to 2.6 live births per woman on average by 1990, after which the rate would remain constant. The third postulates a decline in the total fertility rate to 2.1 by 1990, with no change thereafter. Such a drop is highly unrealistic but is included for illustrative purposes as it is the level needed to achieve zero population growth in the absence of migration.

Only one set of mortality assumptions is used. Life expectancy is projected to increase from 68 years at birth to 74 years by 2010 for females and from 61 years to 66 for males.

Three alternative migration patterns are postulated. The estimated current level of net emigration of 800 per year could remain constant in future years. A second pattern might be that net emigration

Figure 2: Population of Dominica, 1980–2030



drops to 400 per year beginning in 1980. Finally, for illustrative purposes, an assumption of no migration is also considered.

Based on these alternative postulates about demographic behaviour, four different future population scenarios have been prepared for Dominica (see Figure 2; for supporting data, see Appendix Table B):

Scenario A–current fertility (3.4) and current net emigration (800 per year)

Scenario B–declining fertility (2.6) and declining net emigration (400 per year)

Scenario C–replacement-level fertility (2.1) and net migration of zero

Scenario D–current fertility (3.4) and declining net emigration (400 per year).

Numerous other combinations of future patterns of fertility, mortality, and migration are of course possible. These four have been selected to illustrate the wide range of possibilities that exist.

Population Projections: Currently fertility in Dominica is fairly low. The crude birth rate is about 27 per 1,000 and the total fertility rate is 3.4. Similarly, net emigration is high. If the assumed 800 per year is approximately accurate, this yields a rate of 11 per 1,000—high by any standard. Finally, life expectancy is already quite high but should nonetheless improve somewhat in future years.

A continuation of such a demographic situation (Scenario A) would result in relatively small growth in future years. By the turn of the century Dominica's population would reach 86,000, about 13,000 more than in 1980. This would reflect an annual rate of growth of 0.9 percent. Thirty years later, in 2030, the population would peak at about 97,000 and would remain fairly constant thereafter. At that time the crude birth rate would be 20.0; the crude death, 12.7; and the net emigration rate, 8.3.

Insofar as size is concerned Scenario A, a continuation of current demographic behaviour, is encouraging. Dominica's carrying capacity is of course limited, but an eventual no-growth population of between 100,000 and 110,000 would appear to be quite reasonable. Any further growth beyond that level would seem to be unwise.

However, fertility must remain at its present fairly low level for such a goal to be attained with the continued high level of net emigration assumed. Is it realistic to make such an assumption about future patterns of migration? What would occur if the emigration level was reduced by half, for example? Such a development is not that remote a possibility. The United States and Canada may well reduce legal migration in future years; Guadeloupe and Martinique may well establish stronger regulations as may other Caribbean nations that themselves begin to worry about growth.

A brief examination of Scenario D (current fertility and half the current net emigration) illustrates the possibility of such a situation. By the year 2000 the population of Dominica would have reached 99,000; by 2030, it would be close to 150,000. Even at that time, the overall rate of growth would still be 1.2 percent—a clearly impossible situation.

Obviously any decine in net emigration would necessitate parallel declines in fertility to compensate for the increase in numbers. Scenario B offers one possible direction to follow. With a total fertility rate of 2.6 and net emigration limited to 400 per year, Dominica's population would still grow. By the turn of the century it would have passed the 90,000 mark and by 2030, the 110,000 mark. At that time its crude birth rate would be 16.7; its crude death rate, 11.9; and its net emigration rate, 3.6. Thereafter very little growth would occur. Indeed its population would peak at 112,000 in 2040. This, then, appears to be a reasonable alternative path to follow should levels of net emigration be reduced in future years.

Demographers have long discussed the built-in momentum for growth in any society's population. Scenario C has been prepared to illustrate this important demographic fact. Here it is assumed that the level of fertility falls to 2.1 live births per woman by 1990 and that net migration equals zero from now on. A total fertility rate of 2.1 is the level needed to replace the population in the long run in the absence of migration. Interestingly, under Scenario C the population would grow more rapidly than it would under either A or B. The 100,000 mark would be attained shortly after 2000 and by 2030, the population would reach 129,000. All further growth would cease some ten years later at 132,000, at about double the current size.

How can a population continue growing—almost doubling its numbers—when its fertility is at the so-called replacement level? Recall that Dominica has a very young population. Without the continued historical emigration of many young people, the large number of youth become a large number of adults. Even if they limit themselves to 2.1 live births per woman, so many women are in their reproductive years that the number of births keeps increasing although the birth rate is falling. It is only in the next generation and the one after it that the young adult group becomes small enough in size not to have as many children. On average it takes some 60–70 years for a nation to attain zero population growth, without migration, after its fertility first reaches replacement level.

Scenarios C and D are both unrealistic. However, they serve to point out the enor-

Table 3: Percent Distribution of Population by Age-Group in Dominica, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
Scenario A						
Under 15	41	32	34	29	27	27
15–64	53	61	59	64	64	60
65 or older	6	7	7	7	9	13
Scenario B						
Under 15	41	32	30	27	24	23
15–64	53	62	64	67	68	65
65 or older	6	6	6	6	8	12
Scenario C						
Under 15	41	32	28	25	23	21
15–64	53	62	67	70	71	68
65 or older	6	6	5	5	6	11
Scenario D						
Under 15	41	33	35	32	31	31
15–64	53	61	59	63	63	60
65 or older	6	6	6	5	6	9

mous long-run impact of change in fertility or migration behaviour. It is thus important that policymakers be aware of this built-in momentum and take it into consideration in their planning.

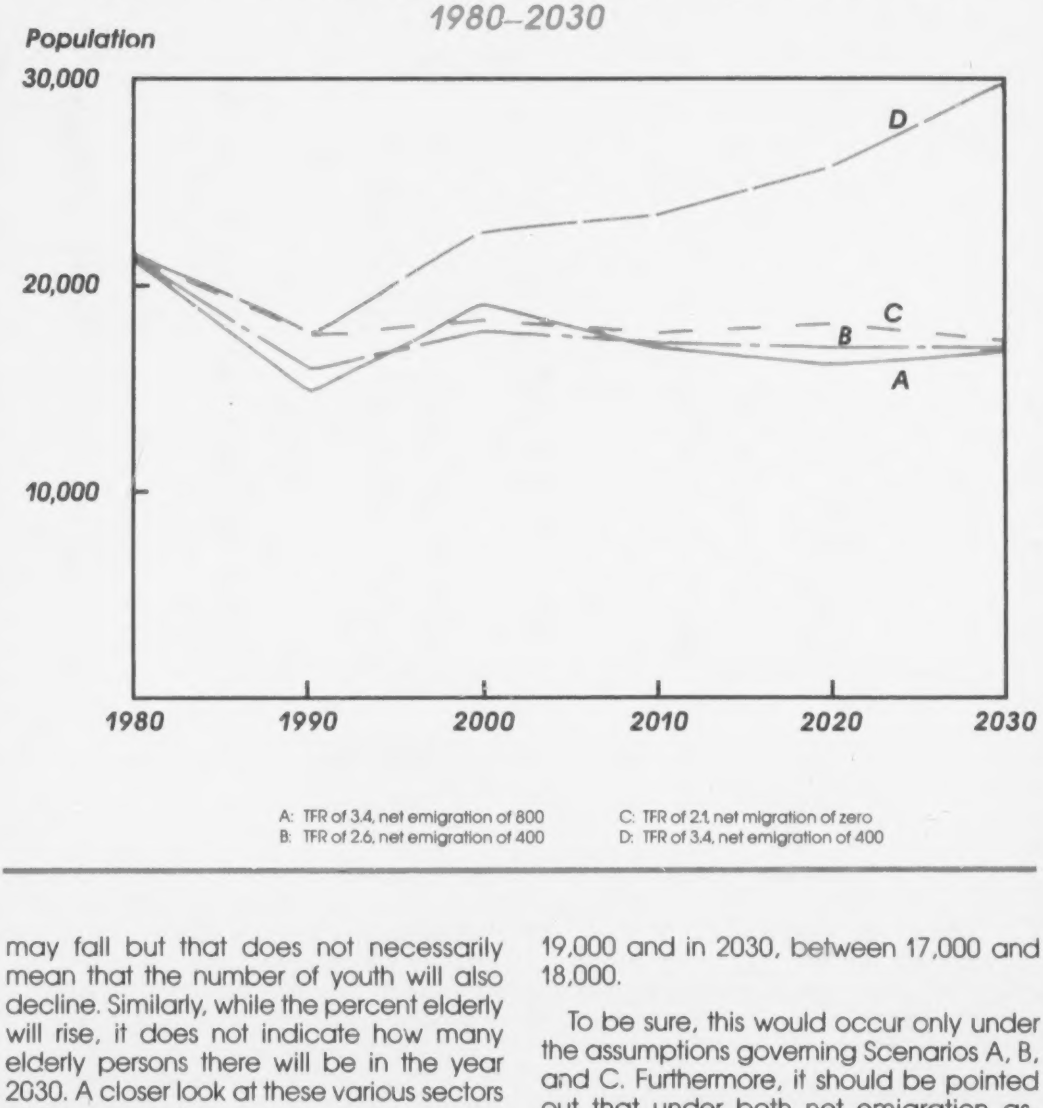
As far as population size is concerned, Dominica appears to be in a fairly fortunate position as it approaches the turn of the century. This is in large part due to its recent decline in fertility and its continued high level of net emigration. But any increase in fertility—however slight—or any decline in net emigration could lead to serious population problems in the not-too-distant future. It is thus suggested that both fertility and migration be measured as accurately as possible and monitored closely to detect any changes in either or both.

As noted earlier, changes in demographic behaviour affect not only population size but also population composition, particularly age distribution. In the short run, changes in age distribution may be even more important than variations in population size. Furthermore, past variations in fertility, mortality, and migration will affect the age distribution for many years to come.

Irrespective of scenario, the population of Dominica will age in future years. That is to say, the proportion of youth will decline while that of the elderly will grow (see Table 3). For example, under a continuation of current demographic behaviour (Scenario A) the proportion under age 15 will fall from 41 percent today to 34 percent in 2000 and to 27 percent in 2030. Under B, that proportion would drop even more dramatically, to 23 percent in 2030. On the other hand, the proportion of the population who are elderly—those 65 or older—would grow from being 6 percent of the population today to between 9 and 13 percent within 50 years under any of these four scenarios.

Together, then, changes in demographic behaviour, whether in the recent past, the present, or the future, are going to have a significant effect on the age composition of the Dominican population for many years to come. But proportional variations are far less important than numerical variations. The percent of youth

Figure 3: School-Age Population (5–14) in Dominica, 1980–2030



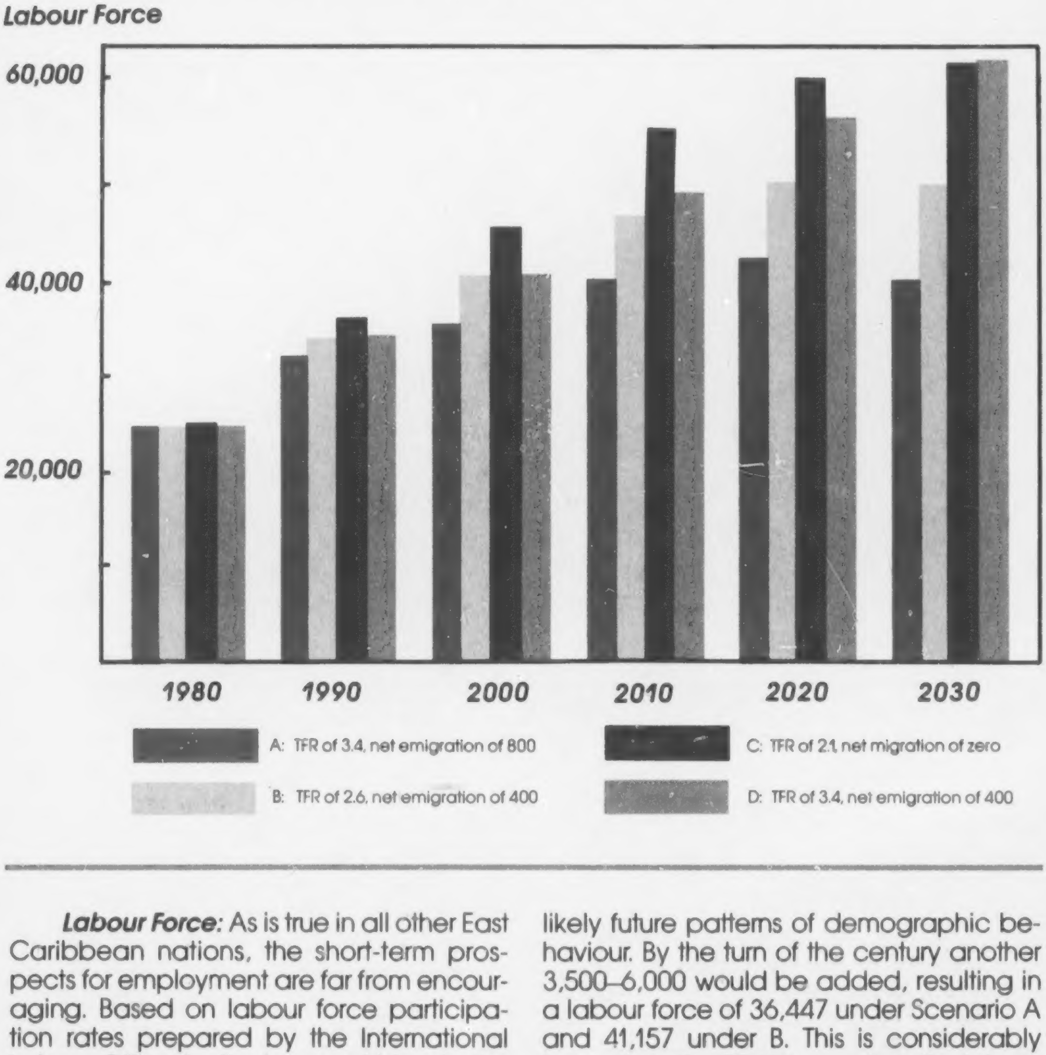
may fall but that does not necessarily mean that the number of youth will also decline. Similarly, while the percent elderly will rise, it does not indicate how many elderly persons there will be in the year 2030. A closer look at these various sectors of the population can give policymakers further guidance.

School Enrollment: The population between the ages of 5 and 14 serves as a surrogate for school enrollment, as most children in that age-group attend school, together with some proportion of older children. In 1980, the school-age population totaled 21,163. Except under Scenario D, that number would not be reached again over the next 50 years. (See Figure 3; for supporting data, see Appendix Table C.) By the year 2000 school enrollments would vary between 18,000 and 19,000 and in 2030, between 17,000 and 18,000.

To be sure, this would occur only under the assumptions governing Scenarios A, B, and C. Furthermore, it should be pointed out that under both net emigration assumptions (800 net per year and 400) a not insignificant number of children are expected to leave the country, probably with their parents. This last assumption may be somewhat overstated. But even if the emigration of children is reduced, it seems reasonable to conclude that total school enrollments in Dominica should remain quite stable for the foreseeable future.

Such stability could allow for both qualitative improvements in the lower levels and increases in the enrollments among adolescents.

Figure 4: Labour Force in Dominica, 1980–2030

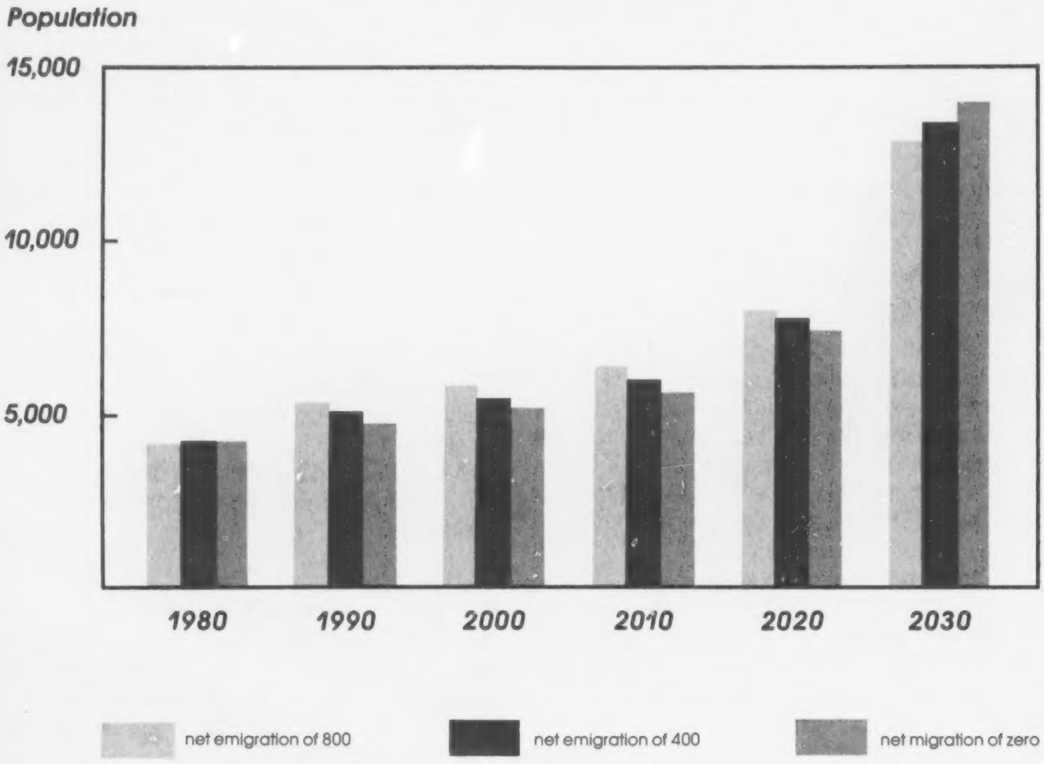


Labour Force: As is true in all other East Caribbean nations, the short-term prospects for employment are far from encouraging. Based on labour force participation rates prepared by the International Labour Office for the Leeward Islands, the total number of people working or looking for work in Dominica amounted to 25,136 in 1980. Given an estimated unemployment rate of about 15 percent, this means that 3,770 people were out of work but nonetheless in the labour force.

Under all the scenarios put forth in this report, the number of Dominicans in the labour force will increase substantially over at least the next two decades. (See Figure 4; for supporting data, see Appendix Table D.) In 1990 that number would reach 32,903 under Scenario A and 34,694 under Scenario B, the two most likely future patterns of demographic behaviour. By the turn of the century another 3,500–6,000 would be added, resulting in a labour force of 36,447 under Scenario A and 41,157 under B. This is considerably larger than the 25,136 people in the labour force in 1980. If unemployment remains at its current level of about 15 percent, this means that in 1990 some 5,000 persons will be unable to locate jobs; by 2000 that number could grow to 6,000.

Only well into the twenty-first century would the labour force tend to level off (except under Scenario D) and employment conditions improve somewhat. Such improvements would reflect the lower fertility of the last two decades of the twentieth century. Similarly, the awesome projections for the immediate future reflect the higher fertility of earlier years.

Figure 5: Elderly Population (65 or Older) in Dominica, 1980–2030



Despite continued emigration the number of persons entering the labour force will continue to grow for some time to come simply because the number of births was greater in the 1960s than in the 1970s and 1980s. Thus it is important to bear in mind that for the next 20 years these labour force projections are quite reliable. The people who will be looking for jobs in 1990 and 1995 are already born; only changes in migration can significantly affect how many job-seekers there will be in those years.

The Elderly: Most developing nations are so concerned with either excessive population growth or with problems associated with youth or the economy that little attention is given to the problems associated with a growing elderly population. Yet in many such countries, the cohorts born before 1960 (whose fertility was high and whose death rates were falling) are large and, despite some reductions through mortality and emigration, will remain large when they become elderly sometime after 2020. This is as true in Dominica as it is in all the other East Caribbean nations.

Furthermore, in Dominica and elsewhere the situation is aggravated by the fact that while net emigration is assumed to continue, this does not mean that the elderly are leaving. Indeed, the opposite is true. The elderly (and near-elderly) tend to return to their homeland after having been away, sometimes for many decades. Thus, the higher net emigration was and is now, the larger the potential number of middle-age and elderly returnees.

In 1980 there were an estimated 4,200 persons 65 or older. Under three of the postulated demographic patterns, that number will increase by some 20 to 25 percent by 1990, when there will be over 5,000 elderly Dominicans. (See Figure 5; for supporting data, see Appendix Table E.) Scenario C is an exception as no migration is assumed. The number of elderly will continue to rise for the foreseeable future, to between 5,500 and 5,900 in 2000, and in 2030 Dominica's population will include some 13,000 elderly, three times as many as presently in the population.

As mentioned earlier, the proportion of the total population 65 or older will grow over the next 50 years from 6 to 13 percent. It is the translation of these rates into real numbers that is most meaningful for decision-making in the development of policy, however. The needs of the elderly are vastly different from those of the young. Health care can be quite expensive; dependency problems grow. Although the issue will not face Dominica for another 30–40 years, it may be appropriate to begin preparing now, for this situation will undoubtedly occur—the elderly of 2020 and 2030 are already born.

Conclusion: Dominica is in a favourable position demographically speaking as it faces the twenty-first century. However, this healthy status is tentative at best. Only if fertility does not rise and only if net emigration remains at its current high level can the nation be assured of a slow rate of growth, culminating in a zero-growth situation early in the next century. Any decrease in net emigration would have to be offset by substantial declines in fertility if the same end result of no growth is to be achieved.

Aside from sheer size, the nation's policymakers have to face a demographically founded problem soon in the large number of additions to the labour force. And within 30–40 years the size of the elderly population could become a significant issue.

In sum, every aspect of the Dominican population—its size as well as its composition; its fertility, mortality, and migration—must be continuously closely monitored and must be considered in governmental policymaking.

Appendices

Table A: Population and Crude Birth and Death Rates in Dominica, 1946–70

Year	Population	Crude Birth Rate	Crude Death Rate	Rate of Natural Increase
	(number)	(per 1,0000 population)		(percent)
1946	47,630	36.2	20.9	1.5
1950	51,850*	35.9	18.4	1.8
1955	57,410*	44.8	15.3	3.0
1960	59,920	46.9	14.9	3.2
1970	69,549	39.0	10.0	2.9

*End of Year Estimates

Table B: Current and Projected Population of Dominica, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	72,311	78,899	86,387	91,165	94,485	96,767
B	72,311	82,521	91,710	100,129	104,792	110,980
C	72,311	86,682	98,431	110,794	121,242	128,789
D	72,311	83,880	98,937	114,032	131,143	149,622

A: TFR of 3.4, net emigration of 800
B: TFR of 2.6, net emigration of 400
C: TFR of 2.1, net migration of zero
D: TFR of 3.4, net migration of 400

Table C: Current and Projected School-Age Population (5–14) in Dominica, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	21,163	14,882	19,005	17,407	16,437	16,956
B	21,163	16,276	18,234	17,580	17,116	16,981
C	21,163	17,665	18,532	18,177	18,401	18,077
D	21,163	16,276	22,506	23,562	25,482	29,597

Table D: Current and Projected Labour Force in Dominica, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	25,136	32,903	36,447	40,455	43,394	40,657
B	25,136	34,694	41,157	47,360	50,551	50,200
C	25,136	36,485	45,872	54,889	59,745	61,137
D	25,136	34,696	41,169	49,251	56,857	62,054

Table E: Current and Projected Elderly Population (65 or Older) in Dominica, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	4,253	5,291	5,891	6,461	8,184	12,920
B and D	4,253	5,082	5,500	6,020	7,935	13,475
C	4,253	4,873	5,108	5,577	7,689	14,028

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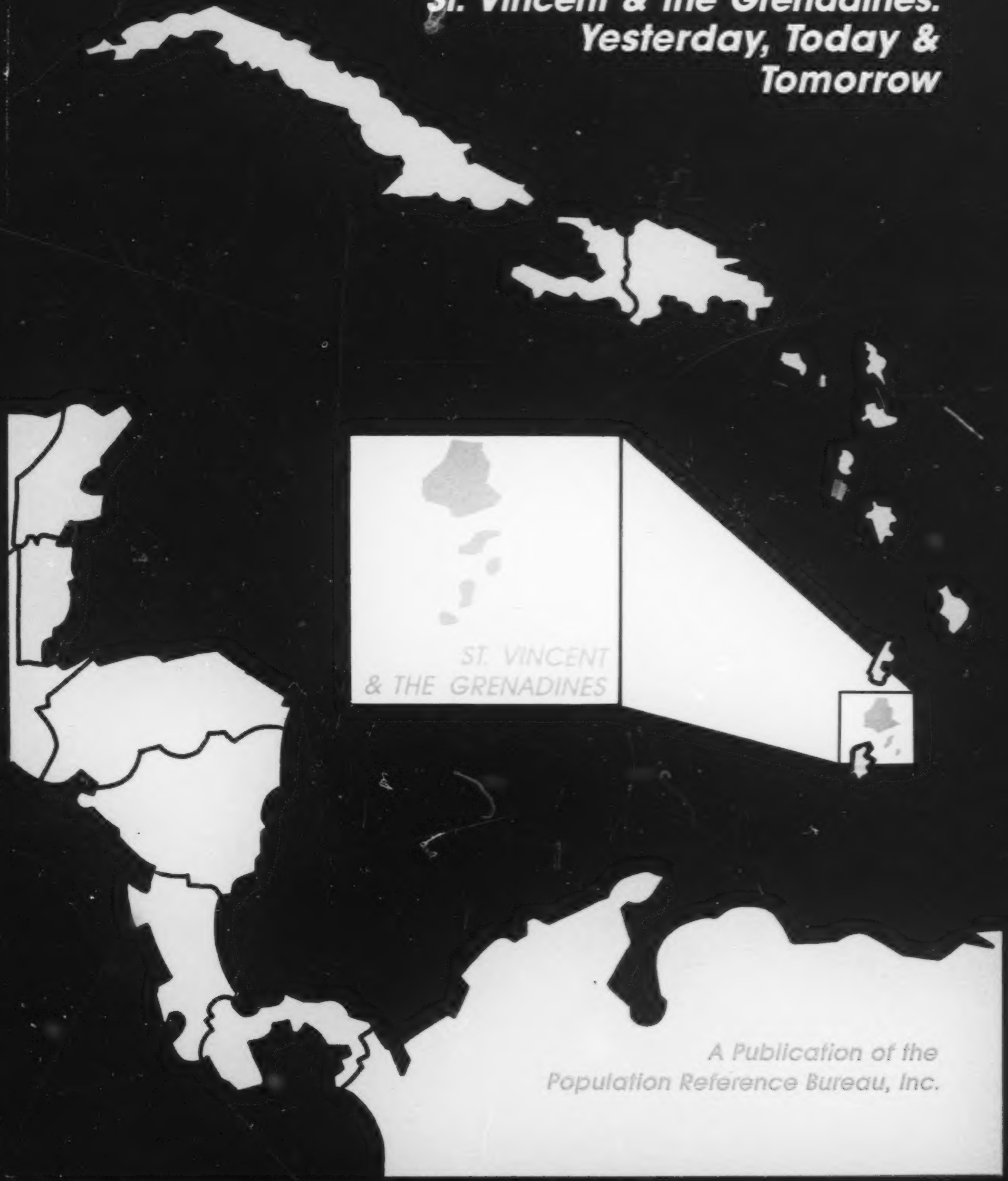
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The data used in the preparation of the population estimates and projections were selected by the author. Their use in no way suggests their acceptance as official demographic statistics by the Governments of the Eastern Caribbean.

The views expressed in these reports are those solely of the author. They do not necessarily reflect the view of USAID, CARICOM, or the respective governments.

St. Vincent & the Grenadines: Yesterday, Today & Tomorrow

by Leon F. Bouvier
March 1984

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St. Vincent & the Grenadines: Yesterday, Today & Tomorrow

St. Vincent & the Grenadines Yesterday

In 1844, when the first post-emancipation census was taken in St. Vincent and the Grenadines, 27,248 residents of the islands were counted. The country, contrary to elsewhere in the Caribbean, conducted a census every ten years from 1851 through 1931, with the exception of 1901 (see Table 1). Although these enumerations may not all have been of high quality, they nevertheless yield a fairly accurate approximation of what transpired, as far as population growth in the islands is concerned, over that 87-year period.

From 1844 to 1881, population growth was fairly substantial, averaging about 1.1 percent per year. The number of residents increased during that interval by 13,300. Over the next 30 years, however, growth was negligible: from 40,548 in 1881 to 41,887 in 1911. Population losses occurred as a result of the disasters of the 1898 hurricane, when an estimated 300 persons died, and the volcano eruption in 1902, when some 2,000 residents lost their lives.

Table 1: Population of St. Vincent and the Grenadines, 1844–1931

Year	Number
1844	27,248
1851	30,128
1861	31,755
1871	35,688
1881	40,548
1891	41,054
1911	41,877
1921	44,447
1931	47,961

After 1911, the rate of growth once again increased, particularly after 1931, and by 1946 the total population reached 61,780. Over this latter interval the average annual rate of growth was 1.7, substantially higher than in previous periods. Such growth over the century of 1846 to 1946 typified the Windward Islands in contrast to the Leeward Islands, where growth was far less substantial.

Vital statistics data are almost non-existent for the years prior to 1921. It can be reasonably assumed that both fertility and mortality were quite high throughout the nineteenth century, with births surpassing deaths except in 1898 and 1902 (the years of the hurricane and the volcano eruption). Levels of international migration prior to the turn of the century are particularly difficult to ascertain. As a general rule, crude birth rates of 40–45 per 1,000 population, crude death rates of 20–25 per 1,000, and a fair amount of emigration reflect the overall nineteenth-century demographic picture of this part of the Caribbean.

Data on births and deaths are available for the period 1921–46 and estimates of crude birth and death rates are thus possible. Little variation occurred in birth rates over those 25 years, and the rate remained close to 40 per 1,000. Some improvements in mortality were noted and the crude death rate fell somewhat, from 19.3 in 1920–25 to 16.8 in 1940–45. As a result, natural increase rates (that is, the difference between crude birth and death rates) rose from 1.9 percent to 2.4 percent per year in the early 1940s before dropping somewhat in the late 1940s.

Only because emigration was quite high did the rate of population growth stay well below 2.0 per year. Net emigration was particularly high between 1921 and 1931, at about 570 persons yer year. This suggests an emigration rate of 12.5 per 1,000 population. Out-movements slowed in the 1930s and 1940s, averaging about

Table 2: Population of St. Vincent and the Grenadines and Rates of Birth, Death, and Natural Increase, 1946–70

Year	Population	Crude Birth Rate	Crude Death Rate	Rate of Natural Increase
	(number)	(per 1,000 population)		(percent)
1946	61,780	38.7	15.5	2.3
1950	67,120*	40.0	15.4	2.5
1955	76,050*	57.8	14.6	3.3
1960	79,948	49.4	15.0	3.4
1970	86,314	35.7	8.3	2.7

*End-of-year estimates developed by Roberts and Harewood.

200 per year. Without such overall high levels of emigration, the population of St. Vincent and the Grenadines in 1946 might well have passed 80,000 rather than the 61,780 residents counted that year.

Although no censuses were taken between 1946 and 1960, the quality of the vital statistics improved, particularly due to the work of Caribbean demographers George Roberts and Jack Harewood. This report's discussion for this period is based on their exhaustive study on the population of the British Commonwealth nations of the Caribbean.*

St. Vincent and the Grenadines' population grew by 18,168 between 1946 and 1960, at which time it stood at 79,948 (see Table 2). This indicates an annual rate of growth of about 1.8 percent—slightly higher than during the preceding 15 years. Such a rate, if maintained indefinitely, would result in a doubling of the population in about 39 years.

Over the 1946–60 period natural increase amounted to almost 30,000 (45,000 births minus 15,000 deaths) and net emigration was estimated at between 11,000 and 12,000. Fertility increased from 38.7 per 1,000 population in 1946 to 49.4 in 1960. The latter rate is one of the highest ever recorded in any East Caribbean island, and the rate may, in fact, have topped 50 per 1,000 in the mid-1950s. On the other hand, mortality levels hardly varied: The crude death rate remained around 15 per 1,000.

The natural increase resulting from these fertility and mortality rates was extremely high—over 3.3 percent per year in the 1950s. Nevertheless, population growth was tempered by the large emigration from the islands in this period. Net emigration averaged about 850 per year—a rate of 12 per 1,000, close to the rate of the 1920s.

The high rate of population growth noted for 1931 through 1960 subsided during the following decade. By 1970, the population of St. Vincent and the Grenadines totaled 86,314—just 6,366 more than enumerated in 1960. This represented an annual rate of growth of just 0.8 percent. The change can be explained both by reductions in fertility and by increases in net emigration. Birth rates fell rapidly, reaching 35.7 in 1970—a significant drop from the rate of 49.4 measured by Roberts and Harewood for 1960. Similarly, death rates fell, though not as rapidly, from 15.0 to 8.3. Numerically, 36,565 births and 9,164 deaths were recorded over the decade.

These figures suggest emigration from the islands at unprecedented rates. Guadeloupan demographer Jean-Pierre Guengant has estimated the migration rate for the 1960s at about 24 per 1,000. Assuming the comparative accuracy of the 1960 and 1970 censuses, some 21,000 more people left St. Vincent and the Grenadines than moved to the islands over the decade, which supports Guengant's estimate.

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*G.H. Roberts and Jack Harewood, *Estimates of Intercensal Population by Age and Sex and Revised Vital Rates for British Caribbean Countries, 1946–1960* (University of West Indies, 1964).

The declines in fertility and mortality were to be expected. Health conditions improved and infant mortality was lower. Families began realizing that more newborns would survive to adulthood. Perhaps some couples started using family planning during this time as well. But the incredibly high level of emigration can only be explained through economic factors. People tend to leave in search of jobs. Moves to the neighbouring larger islands, such as Trinidad and Tobago and Barbados, as well as to the metropolitan nations were considerable.

St. Vincent and the Grenadines saw its population grow from 27,248 in 1844 to 86,314 in 1970. Such growth is among the highest recorded in the region. The century and a quarter was marked by generally high fertility and relatively high (though falling) mortality. Emigration, which had apparently not been particularly large in the nineteenth century, increased dramatically after 1920 and reached enormous levels after World War II.

St. Vincent & the Grenadines Today

The 1980 census of St. Vincent and the Grenadines enumerated 97,845 islanders, which was 11,531 more residents than in 1970.† This yields an average annual rate of growth for the decade of 1.2 percent—slightly lower than that noted for the previous decade.

Throughout the 1970s, the crude birth rate continued to fall and reached 31.0 in 1980, the lowest ever recorded up to that date. The total fertility rate (TFR, which is the average number of live births per woman) was 4.5 in 1980. Family planning became more acceptable in the 1970s, although many couples still were not using any method. By 1981, some 20 percent of the women at risk of pregnancy were using contraceptives.

The crude death rate fell slightly, from 8.3 in 1970 to 7.3 per 1,000 population in 1980, and the infant mortality rate dropped by 1979 to 39 deaths to infants under age one per 1,000 births.

Determining the extent of net migration is always considerably more difficult than determining crude birth and death rates. However, by using the reverse projection demographic technique* it is possible to arrive at reasonably reliable estimates of the extent of net migration between two censuses by age and sex.

Based on this method, net emigration from St. Vincent and the Grenadines is estimated to have been about 10,000 for the decade of the 1970s, or 1,000 per year. Slightly more women than men emigrated and, as always in the East Caribbean, most emigrants were young adults. The few people moving into the country were over age 55, presumably returnees from abroad or from neighbouring islands.

According to official records 4,269 Vincentians entered the United States as permanent immigrants over the 1970s (see Table 3), and perhaps another 500 went to Canada. The migration to the United States was considerably larger than in the 1960s. The migration stream presumably shifted dramatically away from the United Kingdom after passage of the Commonwealth Immigration Act of 1962.

The changes in fertility, migration, and, to a certain extent, mortality contributed

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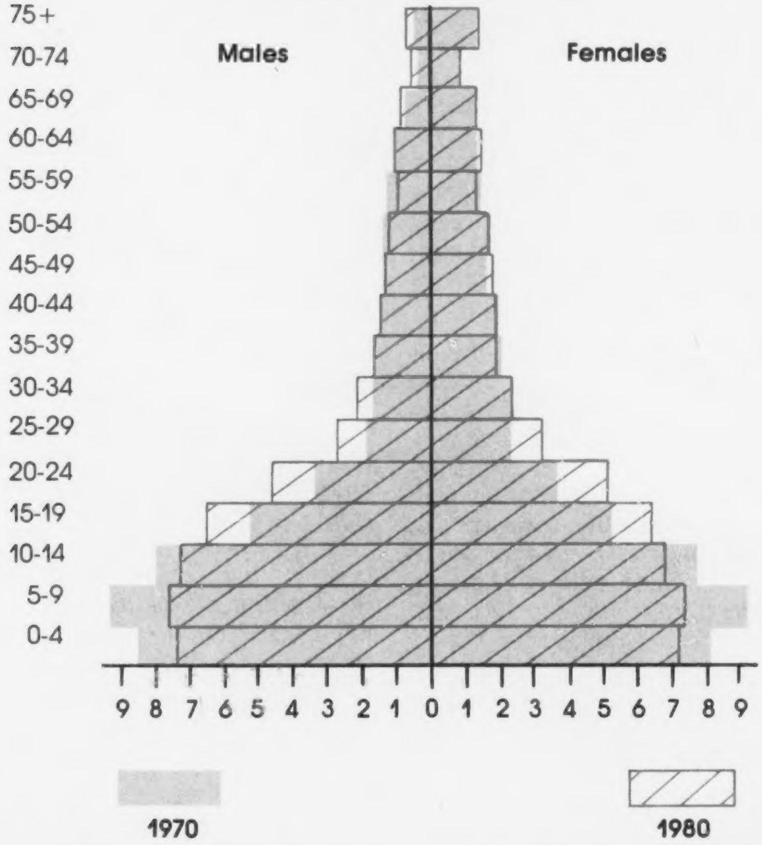
†The figure of 97,845 is considerably lower than the total projected population for 1980 and hence is not official.

*The reverse projection method "survives" the population by age and sex backward in five-year intervals. By using appropriate survival rates, a population—males aged 45–49 in 1980, for example—can be restored to the number who would have been 40–44 in 1975 and 35–39 in 1970. Assuming relatively complete censuses in both 1970 and 1980, any differences in the age-sex distribution in 1970 between the restored and the actual enumerated populations must be accounted for by either immigration or emigration. This yields only a rough estimate of the level of net migration over a decade; nonetheless it is the best available, short of actual data on migration itself.

Figure 1: Age-Sex Distribution of St. Vincent and the Grenadines, 1970 and 1980



to changes in the age composition of the nation between 1970 and 1980, as can be seen in Figure 1. St. Vincent and the Grenadines has been and remains a very young nation. Its median age was about 16.5 in 1980, slightly higher than the very low figure of 14.5 in 1970. This median age ranks among the lowest in the world. The reasons are twofold: historically high levels of fertility and massive emigration of young adults.

Table 3: Permanent St. Vincent-Born Immigrants Admitted to the United States, 1960–79

Year	Number
1960–64	571
1965–69	1,201
1970–74	1,564
1975	346
1976	456
1977	585
1978	679
1979	639

In 1970, 51.2 percent of Vincentians were under the age of 15. In fact, there were twice as many people under the age of 10 as there were aged 15–24! On the other hand, only 4.8 percent of the islanders were 65 or older. Because of the extremely large proportion of young people in the population, the dependency ratio in 1970 was very high: 127 persons of dependent age (under 15 or over 64) per 100 persons of active age (15–64).

Some improvement in the dependency

ratio occurred by 1980, primarily because fertility fell somewhat over the decade. By 1980, the proportion under 15 was down to 43.7 percent and that 65 or older was up to 5.7 percent. The resulting ratio was 98 dependents per 100 persons of active age. Thus fewer working-age people were needed to support the dependents. Yet the ratio remains high compared with neighbours such as Barbados (78) and Antigua and Barbuda (62).

Even more important than changes in age distribution are the numerical variations these imply. For example, the number of children between 5 and 14, an approximation of the figure of school enrollment, dropped from 29,813 in 1970 to 28,570 in 1980—an insignificant decline. Greater reductions in fertility would have resulted in larger numerical decreases. However, the number of elderly grew from 4,190 in 1970 to 5,613 in 1980—an increase of 33 percent. This is a typical developing-country situation that can be expected to continue in future years. As fertility falls and life expectancy rises, the proportion of youth also falls while that of the elderly rises.

The demographic future of St. Vincent and the Grenadines remains a question. Fertility has been falling but still remains relatively high compared with some of its neighbours. Progress in extending life has been made but, again, not to the extent noted elsewhere. Emigration remains substantial, though it fell somewhat in the 1970s. The carrying capacity of the islands is necessarily limited, perhaps to an eventual population size of some 150,000 or so. It remains to be seen if such a goal can be attained without being exceeded.

St. Vincent & the Grenadines Tomorrow

Societal planning for the future always benefits from population projections. In this report alternative sets of projections have been developed using different levels of fertility and migration. These result in a variety of scenarios that depict what the population of St. Vincent and the Grenadines would be—its size and age distribution—at various points in the future. It should be emphasized that these are not to be viewed as "predictions"; they are simply the results of mathematical calculations based on certain stated assumptions about the future demographic behaviour of Vincentians.

Demographic Assumptions: Three postulates of fertility behaviour are used. One assumes a continuation of the present total fertility rate of 4.5 live births per woman for the next 50 years. Another assumes that fertility will fall to 2.8 by 1990, remaining thereafter at that level. The third postulate is that fertility will fall to 2.1 by 1990, with no further changes after that date. This last is the level needed to replace the population in the long run without any migration.

Only one set of mortality assumptions is used. For women, life expectancy is assumed to increase from 65 years at birth in 1980 to 70 years by the turn of the century, with no further changes anticipated afterwards. For men, life expectancy is assumed to increase from 61 to 66 years by the year 2000.

Three migration postulates are used. The first projects a continuation of the current level of net emigration of 1,000 per year. The second assumes half that amount: 500 per year beginning in 1980. A third assumption, used for illustrative purposes only, has net migration equaling zero; it assumes, in other words, that as many people enter the country as leave it.

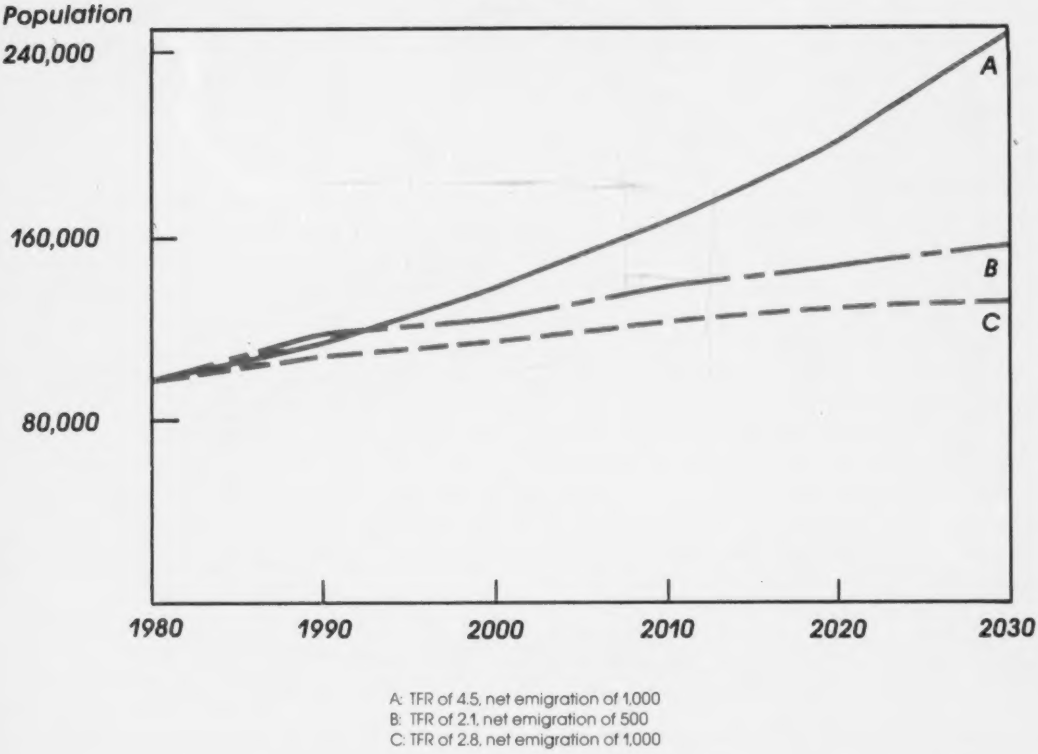
Various combinations of these postulates about fertility, mortality, and migration can be developed. For this report three major combinations have been created (see Figure 2; for supporting data, see Appendix Table A):

Scenario A – current fertility (4.5) and current net emigration (1,000 per year)

Scenario B – replacement-level fertility (2.1) and reduced net emigration (500 per year)

Scenario C – reduced fertility (2.8) and current net emigration (1,000 per year).

Figure 2: Population of St. Vincent and the Grenadines, 1980–2030



The impact of the demographic behaviour in these three scenarios is discussed in the rest of this report. In addition, two other scenarios have been developed to illustrate two extremes of demographic behaviour. Scenario D (fertility of 2.1 and no migration) and Scenario E (fertility of 4.5 and no migration) are discussed briefly and their calculations are summarized in the Appendices.

Population Projections: A continuation of the current demographic behaviour of Vincentians (Scenario A) would lead to massive increases in population within a fairly short period of time. By the turn of the century, the population in St. Vincent and the Grenadines would reach 137,137. Within 50 years, in 2030, the population would approach the quarter of a million mark. By 2000 the population would have increased by 42 percent; by 2030, the figure would be 157 percent.

Assuming that net emigration cannot be expected to increase in the future (indeed, it could be argued that it might be reduced some, given the increasing reluctance of many receiving countries to accept as many immigrants as in the past), then surely fertility levels must be reduced. Furthermore, as St. Vincent and the Grenadines has a very limited land area, the appropriate question to ask is "How many people can the country adequately support?"

Although only the nation's policymakers can answer that question, an eventual zero-growth nation of some 125,000–150,000 seems fairly reasonable, and this range serves as a general target in this report. Given these conditions, Scenarios B and C have been developed as alternative paths to follow if indeed the nation's goal is to limit population size to about 125,000–150,000.

Under Scenario B net emigration is halved, to 500 per year. As stated earlier, such a development is not out of the question. What level of fertility would be required in such a situation to result in an eventual stationary population of not more than 150,000? The calculations undertaken for this report indicate that fertility would have to be cut by 1990 to 2.1 live births per woman on average.

Given this set of assumptions, the population would grow by about 30,000 by the turn of the century, when it would total 126,997. Thirty years later, it would barely top 150,000. Beyond then, the population would begin to decline slowly. Over the whole 50-year period, growth, while steady, would be moderate—just under 0.9 percent per year. Such growth may well be acceptable, but lowering fertility from 4.5 to 2.1 in just ten years is quite unlikely.

Perhaps net emigration levels will not fall at all. Currently about 1,000 more people leave the country than enter it. As noted in Scenario A, even with such a high rate of net emigration, population size would more than double in 40 years if current fertility levels did not fall. What fertility level is necessary to attain zero growth within 50 years within the range stated earlier of 125,000–150,000?

According to Scenario C, a total fertility rate of 2.8 (beginning in 1990) combined with the current level of net emigration would lead to a no-growth situation by 2030, at which time the population of St. Vincent and the Grenadines would number just under 129,000. Such a scenario appers to be quite plausible. Net emigration could be maintained at its present size if receiving countries do not impose additional barriers; lowering fertility from 4.5 to 2.8 in ten years, while quite ambitious, can be accomplished.

Of the two additional scenarios postulated (see Appendix Table A for details), Scenario D shows that the population would grow for quite awhile if fertility were at replacement level and there were no migration. Within 50 years the population would double; indeed, growth would continue until 2045, at which time it would stabilize at 195,000.

Why would the number of Vincentians double despite fertility being at replacement level? There is a built-in momentum for growth, particularly in youthful populations, as in St. Vincent and the Grenadines. Although fertility would fall rapidly and remain low, the number of women in their reproductive years would be so large that births would still exceed deaths, although the difference would gradually fall and eventually disappear in about 70 years.

Scenario E projects the population size if the current fertility rate of 4.5 remains constant and net migration equals zero. The numbers are awesome: nearly 175,000 in 2000 and over 408,000 just 30 years later. By comparing Scenario A (which assumes a continuation of current fertility levels) with Scenario E, the contribution of net emigration to lowering future population size becomes clear. In 2000, there would be 37,000 more Vincentians under Scenario E than with current levels of net emigration; by 2030, the difference would be 160,000.

Both Scenario B and Scenario C appear to meet the requirements specified earlier—that is, to arrive at a zero-growth population in the vicinity of 125,000–150,000. Of course, many other combinations of fertility and migration levels would yield similar results. For example, a total fertility rate of 2.5 and net emigration of 750 per year would result in a similar size population in 2030. These two scenarios are intended to serve as guidelines in the development of social and economic policy and it should be understood that they are just that and nothing more—mathematical models rather than attempts to predict what will in fact occur.

As reducing fertility and keeping emigration high can both result in declining rates of growth, it remains to be seen which variable is more responsive to policy initiatives. What is very much needed are good statistics that will allow for a continuing monitoring of population change.

As mentioned earlier, population characteristics, particularly age distribution, are also affected by changes in demo-

Table 4: Percent Distribution of Population by Age-Group in St. Vincent and the Grenadines, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
Scenario A						
Under 15	44	41	42	41	40	40
15–64	50	53	52	54	55	54
65 or older	6	6	6	5	5	6
Scenario B						
Under 15	44	39	30	27	24	22
15–64	50	56	65	68	69	67
65 or older	6	5	5	5	7	11
Scenario C						
Under 15	44	39	32	31	29	27
15–64	50	55	61	62	63	62
65 or older	6	6	7	7	8	11

graphic behaviour—indeed, by changes that may have occurred 20 and even 30 years ago.

If current demographic behaviour remains unchanged in future years, the overall proportional age distribution will not vary significantly (see Table 4). In 1980, 44 percent of all Vincentians were under 15; 50 percent were between 15 and 64; and 6 percent were 65 or older. A slight decline in the young population would be noted by 1990 under Scenario A, after which only slight variations would take place. Similarly, the proportion of elderly would not vary much during the next 50 years. Because of the decline in the young population, some proportional growth would be noted among the working-age population (15–64).

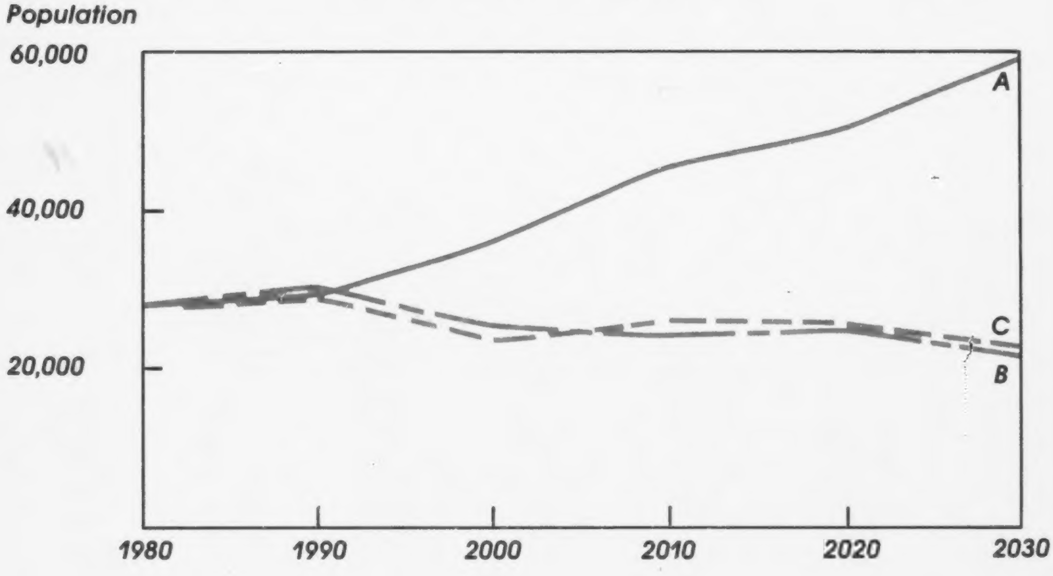
Changes in proportional age distribution would be far more noticeable under Scenarios B and C. Looking first at B, youth would become an ever smaller proportion of the population over time—dropping to 30 percent by the year 2000 and to 22 percent by 2030. Both the active and the elderly groups would increase their shares of the total population. By 2030, two-thirds of all Vincentians would be between 15 and 64 and another 11 percent would be 65 or older, in marked contrast to the current situation.

Under Scenario C, the young group would also decline, though not as much as under B; the elderly group would again grow to 11 percent in 2030, but the working-age group would only increase its share to 62 percent rather than the 67 percent under B. These substantial changes in age distribution under Scenarios B and C result from both the postulated drop in fertility (which explains the declining proportion of youth) and the high levels of fertility in 1980 and earlier (which explains the growing proportion of elderly after 2015). Particularly interesting is the fact that under either of these scenarios the dependency ratio would eventually be much lower than under A.

Taken together, any future changes in fertility and/or migration behaviour will have significant impacts not only on the age distribution of the population but also on the number of people enrolled in schools, the number of workers and jobseekers, and the number of retired individuals. It is the impact of demographic patterns on such areas that is rightfully of most concern to policymakers.

School Enrollment: The school-age population of St. Vincent and the Grenadines in 1980 (that is, the number of children aged 5 through 14) totaled 28,570. This figure is used as a substitute for actual school enrollments as in most developing countries enrollments closely approximate the total population in that age category.

Figure 3: School-Age Population (5–14) in St. Vincent and the Grenadines, 1980–2030



A: TFR of 4.5, net emigration of 1,000
B: TFR of 2.1, net emigration of 500
C: TFR of 2.8, net emigration of 1,000

Under Scenario A, school enrollments would grow substantially in future years, to 36,933 in 2000 and to almost 60,000 in 2030 (see Figure 3; for supporting data, see Appendix Table B). In other words, in 50 years the number of children enrolled in schools would double. This, of course, reflects the continued high fertility posited in this scenario.

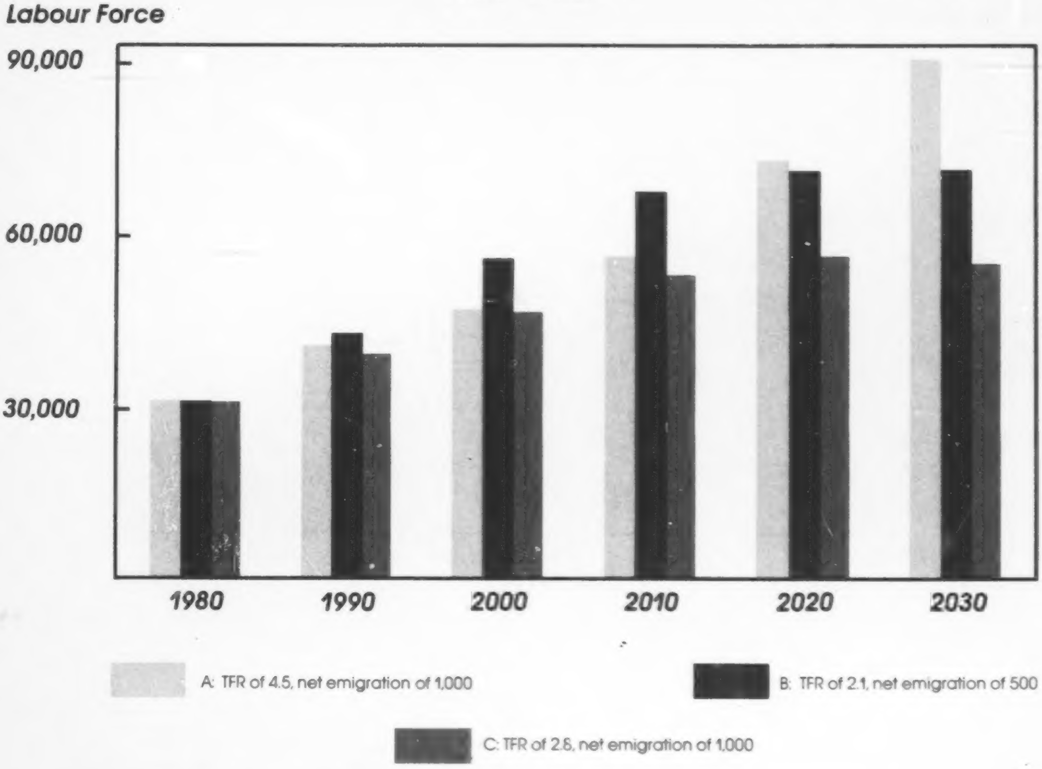
Under both Scenario B and Scenario C, school enrollments would increase slightly between 1980 and 1990. After that, when fertility would be markedly lower, enrollments would decline. The number of school-age children in 1980 would never again be reached. The difference between Scenarios B and C in the next century would not be considerable.

Such a prospect for the educational system of the future is positive indeed and could result in major qualitative improvements in the schools of the nation. To be sure, such developments rest on an assumption of substantial reductions in fertility.

Labour Force: Irrespective of scenario selected, the labour force of St. Vincent and the Grenadines will grow tremendously at least for the next 20–30 years. Based on labour force participation rates developed for the Windward Islands by the International Labour Office, the total number of people working or looking for work in 1980 was 31,259.

That number is bound to increase dramatically between now and the turn of the century. If fertility and net emigration remain at current levels (Scenario A), 40,981 people would be in the labour force by 1990 and 47,607 by 2000 (see Figure 4; for supporting data, see Appendix Table C). Thus, about 16,000 more jobs would have to be created by the end of this century simply to keep unemployment at its present unsatisfactory level of about 15 percent. This means that in 1990 there would

Figure 4: Labour Force in St. Vincent and the Grenadines, 1980–2030



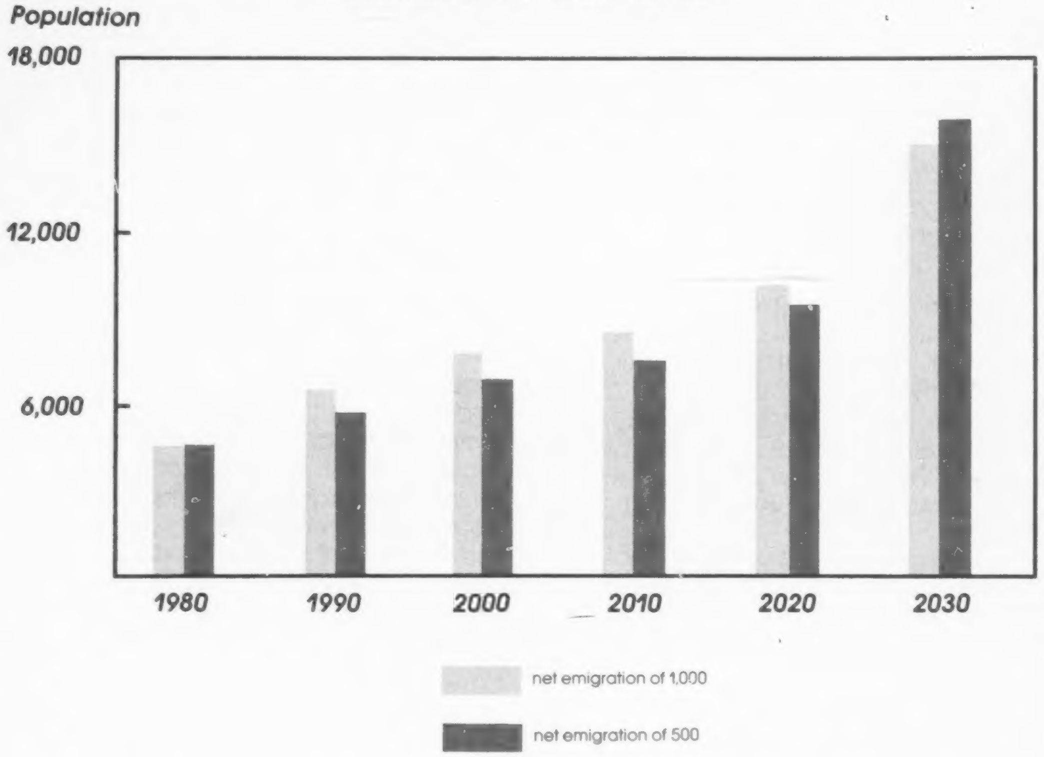
be 6,150 unemployed Vincentians, compared with 4,600 in 1980. By 2000, that number would climb to 7,100, assuming no further deterioration in employment conditions between now and then.

Turning to the other scenarios, under B (with net emigration assumed at half its current level) conditions would worsen, at least in the short run. By 2000, the labour force would number 55,693, with at least 8,300 out of work but looking for a job. The situation under C would be somewhat more attractive, though there too this pressing employment problem would be significant. By the turn of the century, 16,000 more jobs would have to be created simply to keep unemployment at its current level.

This imminent growth in the labour force reflects the large number of births that occurred in the late 1960s and early 1970s, when fertility rates were even higher than today. That large cohort of people is now entering the labour force, and despite significant losses through emigration it remains large enough to pose possibly serious problems for the country. And it is worth noting that for the next 20 years these projections are quite reliable. The people who could be looking for jobs in 1985 as well as in 1995 are already born; only variations in migration can affect how many Vincentians will be job-seekers in the years ahead.

Because of both the lower fertility postulated and the continuation of the current high level of net emigration, Scenario C is the most economically promising path in the long run. Although the number of islanders in the labour force will continue to grow after the turn of the century, only under C does there apper to be an end in sight. After 2020, the size of the labour force would level off at around 55,000. In contrast, under A that number would

Figure 5: Elderly Population (65 or Older) in St. Vincent and the Grenadines, 1980–2030



reach 90,000 in 2030, and under B it would exceed 70,000 by that year.

The Elderly: Most developing countries do not concern themselves with gerontological problems. Although the welfare of the elderly is customarily addressed, the problems associated with massive increases in the numbers of retirees are not given high priority. In the East Caribbean nations, as well as elsewhere, a substantial increase in the number of elderly—here defined as 65 or older—can be anticipated for early in the next century. They will be that large cohort of people presently entering the labour force who, by 2015 or 2020, will be entering the retirement stage of their lives.

The high fertility in the 1960s and earlier means that the number of Vincentians reaching age 65 will grow quite substantially in future years, particularly after the turn of the century. In 1980 a total of 4,576 people in the islands were 65 or older. That number will grow to 6,000 or more by 1990 and to 6,900–8,000 by the year 2000. Within 50 years the islands could be home to some 15,000–16,000 elderly people, posing a potentially difficult problem for the nation.

Because the elderly of the year 2030 are already born, Scenarios A and C have exactly the same number in their projected future population (see Figure 5; for supporting data, see Appendix Table D). Growth would be significant—74 percent by 2000 and 230 percent in 2030. To be sure, the proportion who are elderly would differ radically between scenarios, as noted earlier, but the numbers will be similar.

Under Scenario B the elderly population would grow somewhat more slowly until after 2030. This projection warrants some explanation, as under B net emigration is half the level under A and C. Thus, the number of elderly would be expected to be larger. Under the net emigration assumptions used here, however, while many young people emigrate from St. Vincent and the Grenadines, a few elderly return to the islands. Thus, the higher net emigration is, the greater the number of potential returnees. Conversely, a lower net emigration figure yields a smaller number of returnees.

After the year 2020, however, the impact of the large cohort born in the early 1960s would begin to be felt, explaining the larger number of elderly under Scenario B than under either A or C. The number of elderly under Scenario B would grow by 50 percent by 2000 and by 340 percent by the year 2030, when the number would have passed 16,000.

Thus the gerontological issues that face St. Vincent and the Grenadines reflect the impact of long-run demographic changes. The fertility behaviour of one generation affects the population distribution for many years into the future, indeed until that generation passes out of existence. Although the problem of a rapidly growing elderly population may appear to be an issue for the distant future, it is nonetheless time to be aware of what will undoubtedly transpire. These people are born; most will be here in 2000 and 2030.

Conclusion: Even under the most optimistic conditions, St. Vincent and the Grenadines will undoubtedly see its population grow from the current level of nearly 100,000 to at least 150,000 in the not-too-distant future. Whether this will mark the end of growth or be just another step toward additional increases cannot be predicted at this time as so much depends on future demographic patterns. Clearly the nation cannot continue to grow at current rates; how that is avoided depends to a considerable extent on future levels of net emigration as well as future fertility, and on the development of population policies.

Appendices

Table A: Current and Projected Population of St. Vincent and the Grenadines, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	97,845	114,375	137,137	165,316	201,903	248,972
B	97,845	116,751	126,997	139,149	147,377	150,505
C	97,845	109,058	116,352	123,980	128,079	128,641
D	97,845	123,034	140,275	160,593	177,469	189,256
E	97,845	128,788	174,197	232,382	308,803	408,020

A: TFR of 4.5, net emigration of 1,000
B: TFR of 2.1, net emigration of 500
C: TFR of 2.8, net emigration of 1,000
D: TFR of 2.1, net migration of zero
E: TFR of 4.5, net migration of zero

Table B: Current and Projected School-Age Population (5–14) in St. Vincent and the Grenadines, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	28,570	29,180	36,933	42,706	50,892	59,713
B	28,570	30,159	25,389	24,372	24,470	22,137
C	28,570	29,180	24,200	25,619	24,663	22,931

Table C: Current and Projected Labour Force in St. Vincent and the Grenadines, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	31,259	40,981	47,607	57,470	73,741	90,098
B	31,259	43,114	55,693	66,862	70,153	70,824
C	31,259	39,509	47,563	53,314	55,913	55,198

Table D: Current and Projected Elderly Population (65 or Older) in St. Vincent and the Grenadines, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A and C	4,576	6,669	7,998	8,712	10,246	15,060
B	4,576	5,973	6,862	7,521	9,516	16,032

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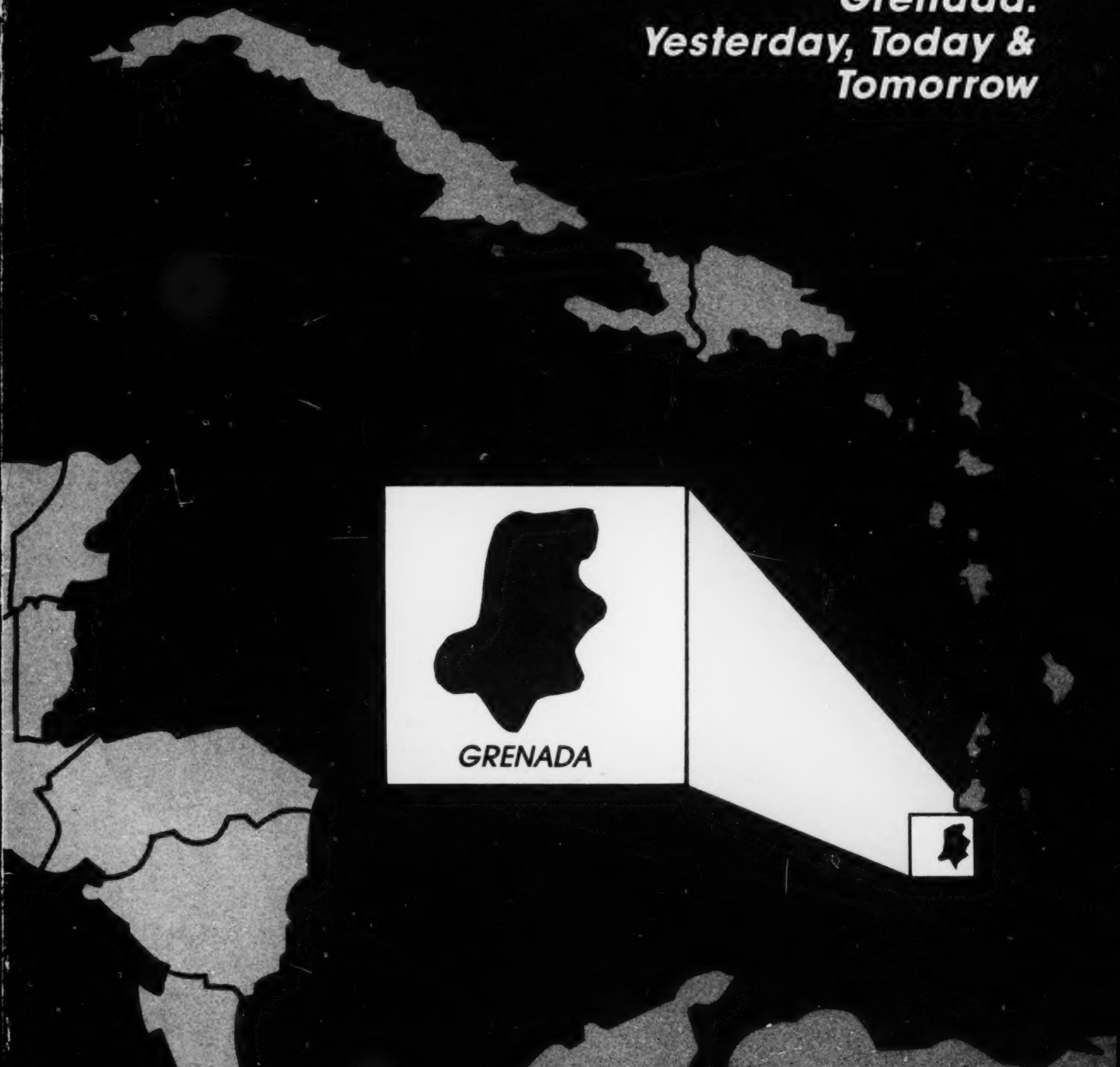
PRB OCCASIONAL SERIES: THE CARIBBEAN

Grenada: Yesterday, Today & Tomorrow



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Barbados: Yesterday, Today & Tomorrow
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Belize: Yesterday, Today & Tomorrow

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The data used in the preparation of the population estimates and projections were selected by the author. Their use in no way suggests their acceptance as official demographic statistics by the Governments of the Eastern Caribbean.

The views expressed in these reports are those solely of the author. They do not necessarily reflect the view of USAID, CARICOM, or the respective governments.

Grenada: Yesterday, Today & Tomorrow

by Leon F. Bouvier
April 1984

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Grenada: Yesterday, Today & Tomorrow

Grenada Yesterday

Grenada is a former French possession that came under the general government of the Windward Islands in 1833. Its first census was taken in 1844, at which time 29,650 persons were enumerated. Since then decennial censuses were held from 1851 through 1921 (see Table 1). No censuses were taken in 1931 and 1941 because of the depression and the war.

Except during the decades 1851–61 and 1911–21, Grenada's population grew consistently over the period 1844–1921. The decline in the 1850s is attributable to a cholera epidemic; high levels of emigration as well as the worldwide influenza epidemic may have been the reasons for the decline after 1910.

By 1901, Grenada's population—63,438—had more than doubled since the first count in 1844. This means that, on average, the population grew by 1.5 percent annually over 51 years. Growth was particularly marked between 1881 and 1911, when the increase amounted to about 25,000 persons.

After 1911, growth came to a halt for all practical purposes, at least until the 1946 census. Between 1911 and 1946 only 5,637 persons were added—an annual rate of growth of only 0.2 percent. As far as population growth is concerned, much of Grenada's growth until World War II occurred before 1900 and in the earlier years of the twentieth century, with little increase noted after 1911.

Although it is not possible to determine rates of fertility and mortality for the nineteenth or early twentieth century, it can be assumed that both were quite high. Crude birth rates of 40–45 per 1,000 population and crude death rates of 25–30 per 1,000 would be normal for that era and region. Net migration was probably not very high either.

By 1921 the crude birth rate was estimated to be 35.1 per 1,000; over the next 25 years it remained in the low to middle 30s, falling to 31.1 by 1945. Death rates remained quite high in this period, ranging from 19.2 to 15.8 (in 1945). As a result, the level of natural increase (that is, births minus deaths) remained about 1.6 percent, even reaching 2 percent in 1931–35 before falling slightly to 1.5 percent by 1945.

Over the 25 years between 1921 and 1946, Grenada grew by 30,132 persons through natural increase (61,169 births and 31,037 deaths). Over the same period, however, the population only increased by 6,085. This suggests substantial emigration of close to 25,000 people, or about 1,000 per year. This level of net emigration is by far the greatest of the Windward Islands. Indeed, it accounts for more than half the total net emigration from the Windwards for that 25-year period.

Thus, over the century or so between 1844 and 1946, it appears that although growth was fairly substantial (29,650 in 1844 to 72,387 in 1946), it would have been

Table 1: Population of Grenada, 1844–1921

Year	Number
1844	29,650
1851	32,671
1861	31,900
1871	37,684
1881	42,403
1891	53,209
1901	63,438
1911	66,750
1921	66,302

Table 2: Population of Grenada and Rates of Birth, Death, and Natural Increase, 1946–70

Year	Population	Crude Birth Rate	Crude Death Rate	Rate of Natural Increase
	(number)	(per 1,0000 population)		(percent)
1946	72,387	32.7	17.0	1.6
1950	76,540*	39.0	13.9	2.5
1955	85,410*	46.3	14.2	3.2
1960	89,960	44.5	11.4	3.3
1970	92,775	28.2	7.5	2.1

*End-of-year estimates developed by Roberts and Harewood.

far greater if emigration had been reduced. Fertility as well as mortality were quite high throughout the 100 years, though both began to fall after 1920. However, net emigration, small at first, grew to extremely large proportions in the twentieth century, particularly between 1921 and 1946.

Presumably numerous Grenadians migrated to the larger islands, such as Trinidad, and to Guyana in addition to moving to Great Britain. Furthermore, as most of the people who moved were men, this undoubtedly contributed to a decline in the fertility rate in the 1940s. As a result of both the high emigration and the declining fertility, the level of actual growth in Grenada as it approached mid-century was very low. The average rate of growth of 0.2 per year between 1921 and 1946 is the lowest of all the Windward Islands.

No censuses were taken between 1946 and 1960. Thanks to noted Caribbean demographers George Roberts and Jack Harewood, however, statistics are available that allow for a more accurate description of the demographic picture of Grenada.* The following section relies on this study for its basic information.

By the 1960 census, Grenada's population had reached 89,960 (see Table 2). This represented an increase of 17,573 since 1946, an average annual rate of growth of 1.5 percent—considerably greater than during the pre-World War II period. This can only be explained by either a higher rate of natural increase or a decline in the level of net emigration.

Crude birth rates went up between 1946 and 1960. In the former year, that rate was 32.7 per 1,000 population, not particularly high for a developing nation. The crude birth rate increased each year through 1955, when it reached 46.3. In 1957 it attained a historical high of 53.5 before falling slightly to 44.5 in 1960. These rates suggest that women were averaging between 6 and 7 children in the post-World War II period, considerably higher than before.

At the same time that fertility rose, mortality fell—from 17.0 per 1,000 population in 1946 to as low as 11.4 in 1960 before leveling off at about 10 per 1,000.

This combination of rising fertility and falling mortality led to a high rate of natural increase. From a rate of 1.6 percent in 1946 it rose to well over 3 percent by the mid-1950s and even topped 4 percent in 1957. By 1960, the rate of natural increase was 3.3 percent. Over the 14-year period there were 47,130 births and 15,280 deaths. Natural increase thus amounted to 31,850.

Since the population increased by only 17,573 between 1946 and 1960, clearly net emigration approximated 14,000, or 1,000 per year. Interestingly, a similar level of net

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*G.H. Roberts and Jack Harewood, *Estimates of Intercensal Population by Age and Sex and Revised Vital Rates for British Caribbean Countries, 1946–1960* (University of West Indies, 1964).

emigration was noted for the pre-war period, though for a smaller base population. Thus, the rate of net emigration after World War II fell slightly although the number itself remained quite stable. According to Roberts and Harewood, however, net emigration was fairly low until 1955, when it began to increase considerably, passing 2,000 per year from 1957 to 1960.

Overall, then, the increase in growth noted from 1946 to 1960 was attributable to massive increases in fertility at the same time that mortality fell. Net emigration had the effect of limiting the annual growth to 1.5 percent, particularly in the late 1950s.

Growth was almost nonexistent between 1960 and 1970 (an average annual rate of 0.3 percent). By the latter year, some 92,775 Grenadians were enumerated, an increase of but 2,815 over the ten-year period. The obvious question is: What caused such a low growth?

Both fertility and mortality fell substantially between 1960 and 1970. Every year in the 1960s saw the crude birth rate fall slightly below the preceding year's level. Whereas the rate was 44.5 per 1,000 population in 1960, it was 26.4 in 1969. In 1970 it rose a bit, to 28.2. As might be expected in a country where population growth is minimal, the number of births also declined considerably, from 4,016 in 1960 to 2,649 in 1970. Mortality, too, fell during the 1960s and by 1970 the crude death rate was 7.5 per 1,000—considerably lower than the 11.4 noted ten years earlier.

As a result of declines in both fertility and mortality (though more so in fertility), the rate of natural increase also fell—from 3.3 in 1960 to 2.1 percent by 1970. Nevertheless this still represented a natural growth through more births than deaths of about 24,000 people. These data suggest that the answer to the question posed above is straightforward: Net emigration during the 1960s continued at the level noted in the late 1950s—at about 2,000 people per year.

Thus the longstanding pattern of substantial emigration from Grenada, noted as early as the 1920s, continued at least until 1970 and, as will be noted later, continues in fact to the present day. The proximity of Grenada to Trinidad and Barbados undoubtedly contributed to such movements, fueled by a failure to provide sufficient employment for young adult Grenadians. One final point worth noting is that the rapid decline in fertility in the 1960s may reflect the lack of adult men in the population as much as it does any serious attempt to limit the size of families through family planning.

Grenada Today

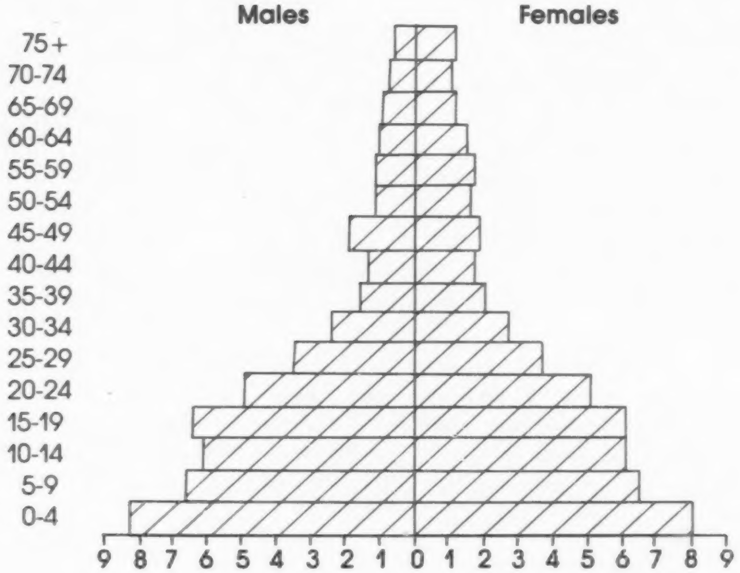
It is extremely difficult to analyze recent demographic changes in Grenada. No census was taken in 1980 and the 1982 count remains incomplete. As this report was being completed, the only available information from that census was the total count: 90,821. If both the 1970 and the 1982 censuses are assumed to be comparably complete, this would indicate a loss of about 2,000 people over the last 12 years.

Because of the need for both an age and sex distribution of the population and a 1980 data base from which to make projections of the Grenadian population, estimates of the size and age and sex composition of Grenada in 1980 have been made based on the 1970 and 1982 counts and on information on births and deaths in the interim. This is the most reasonable estimate possible given the paucity of information.

Through the 1970s the crude birth rate remained in the middle to high 20s, reaching a low rate of 22.8 per 1,000 population by 1982. Over the ten years between 1970 and 1980, some 25,000 births occurred. Crude death rates stabilised at around 7 per 1,000, suggesting some 6,500 deaths over the decade.

If it is assumed that net emigration continued at about 2,000 per year, as has been the case since the late 1950s, the total population for 1980 would be about 91,300. Using this as a not unreasonable

Figure 1: Age-Sex Distribution of Grenada, 1980



estimate, the age and sex distribution of the population has been constructed (see Figure 1) based on the information derived on fertility, mortality, and, indirectly, migration.

The drop in fertility, a process that began in the 1960s, was particularly noteworthy in the latter portion of the decade. By 1977, the rate was estimated to be 24.3 per 1,000, and, as noted earlier, by the 1982 census it was down to 22.8, suggesting only about 2,100 births in that year, compared with 2,890 births as recently as 1975.

The unchanging level of mortality is not surprising, given the already-low rate, which is affected more by the young age of the population than by improvements in health conditions. Life expectancy remained at around 65 years at birth in the 1970s.

The massive movement out of Grenada continued throughout the 1970s and possibly reflected the unstable political conditions during most of that decade. In addition, it undoubtedly contributed to the continuing fall in fertility.

Grenada remains a very young nation, demographically speaking. In 1970 its median age was about 16.5 and 47 percent of the population were under the age of 15, while only 5.8 percent were 65 or older. With less than half the population (47.2) being in the so-called active age between 15 and 64, this meant that Grenada had a dependency ratio of 112. That is to say, 112 persons of dependent ages (under 15 or over 64) had to be supported by 100 persons of active age (15–64).

Both high fertility and the emigration of young adults contributed to this situation. Although the 1980 age composition is an estimate, if it approximates reality the median age went up to about 18 years while the proportion under 15 fell to 41.5 percent and that of the elderly remained at 5.8 percent. The decline in the proportion of youth reflects the lower fertility noted in the 1970s. As a result, the dependency ratio dropped to 90 per 100 persons of active age.

The population of Grenada has hardly changed since 1960; to a considerable extent this can be attributed to very high levels of net emigration. It remains to be seen if such a pattern continues. Economic problems, political unrest, and the proximity of more-advanced islands undoubtedly contributed to the emigration.

Furthermore, the United States has become an increasingly attractive place for Grenadians to move to, particularly following the changes in U.S. immigration laws after 1965. From a mere 361 legal immigrants in 1970, the number entering the country rose to about 1,000 per year beginning in 1977. Over the decade 6,896 Grenadians migrated to the United States legally (see Table 3).

The remainder of this report considers how population size and composition could change in future years as a result of possible variations in the patterns of fertility, mortality, and migration.

Table 3: Permanent Grenadian-Born Immigrants Admitted to the United States, 1960–80

Year	Number
1960–64	590
1965–69	1,707
1970–74	2,149
1975	568
1976	787
1977	1,240
1978	1,206
1979	946
1980	1,198

Grenada Tomorrow

Population size as well as age composition can change only through variations in three demographic variables: fertility, mortality, and migration. In Grenada there has been scant change in population size (though some alterations in age composition) over the past 20–25 years because net emigration has almost always equaled natural increase.

What would occur to the population in future years if changes did take place in fertility and particularly in migration patterns? Alternative population projections have been developed in an effort to address this particular question. It should be emphasized that these are projections and not predictions. They only reflect the assumptions upon which they are constructed.

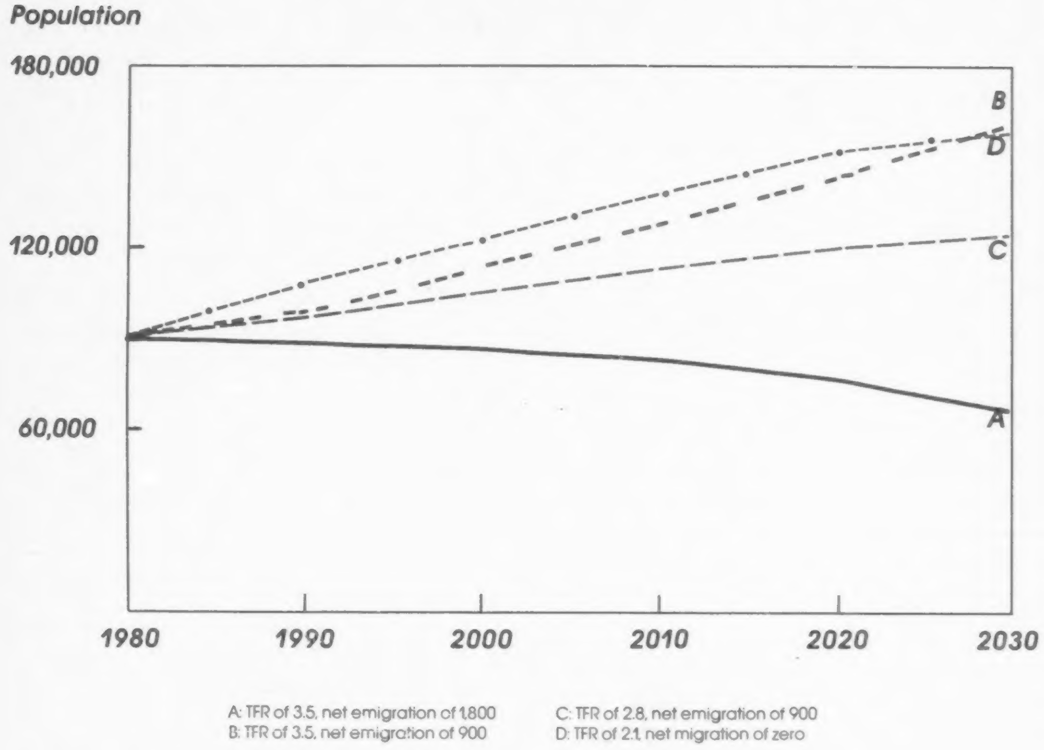
Demographic Assumptions: The current total fertility rate for Grenada is estimated to be about 3.5. That is to say, women on the average have 3.5 live births throughout their reproductive years. As fertility has fallen steadily over the past decade, it seems unlikely that the rate will rise in the near future, although this remains a possibility.

One assumption used in this report is that fertility continues at its current level. Two other fertility assumptions are considered: that the rate falls to 2.8 by 1990, remaining at that level thereafter, and that it falls to 2.1 by 1990 and does not change after that date. A decline from 3.5 to 2.8 by 1990 is not impossible; similarly rapid drops have occurred in Costa Rica and Barbados, for example. A fall to 2.1 is unrealistic but is used for illustrative purposes.

Currently life expectancy at birth in Grenada is about 63 for males and 67 for females. It is assumed that slight progress will be made and that by 2000 life expectancy will be 68 for females and 65 for males. This is the only mortality assumption considered in these projections.

Three net emigration assumptions have been selected for use in this report. One

Figure 2: Population of Grenada, 1980–2030



considers a continuation of present levels, here assumed to be about 1,800 per year—somewhat lower than noted through the 1970s, but perhaps closer to the actual current situation in the mid-1980s.

A second postulates net emigration is halved, to 900 per year. Such a development is certainly possible given the increasing reluctance of the traditional receiving countries to accept more immigrants. Finally, for illustrative purposes, zero net migration is also considered.

Based on these many assumptions about fertility, mortality, and migration behaviour, four different scenarios about the future size and composition of the Grenadian population have been prepared (see Figure 2; for supporting data, see Appendix Table A):

> ***Scenario A***–current fertility (3.5) and current net emigration (1,800 per year)
>
> ***Scenario B***–current fertility (3.5) and half the current net emigration (900 per year)
>
> ***Scenario C***–declining fertility (2.8) and half the current net emigration (900 per year)
>
> ***Scenario D***–declining fertility (2.1) and net migration of zero.

Population Projections: Under Scenario A, which assumes a continuation of current patterns of fertility and net emigration, Grenada's population would begin to decline slightly by 1990. By the turn of the century, it would reach 88,624, and by 2030, the figure would be close to 71,000. Fertility is low enough (3.5 live births per woman) and net emigration is high enough that further growth would not occur in Grenada. This would represent a continuation of the situation since 1970, as the 1982 census enumerated fewer people than were counted 12 years earlier.

For at least a quarter of a century Grenada has exhibited the highest level of net emigration in the East Caribbean. Will such levels continue in future years? As noted earlier, many receiving nations might erect ever more rigid barriers against entry by foreigners, as the United Kingdom has done. The government of Trinidad and Tobago has expressed concern about the large number of illegal immigrants in that country, some of them Grenadians. Barbados, too, is increasingly anxious over immigration from the smaller Windward Islands. Finally, both Canada and the United States are reviewing their immigration laws, with possible reductions in the offing.

Scenario B looks at what would occur in Grenada if net emigration were cut in half, to 900 per year, while fertility remained at its present moderate level of 3.5. The population would grow and by the turn of the century there would be 115,338 Grenadians; 30 years later, they would number over 165,000 and would still be increasing. At that time the rate of growth would be 1.1 percent per year, meaning an additional doubling of the population in 65 years if that rate did not change.

Such growth, while considerable, is not a cause for alarm—at least not for the immediate future. Nevertheless, Scenario B illustrates the tremendous impact of net emigration on the size, and, as will be seen later, the age composition of Grenada's population. Simply lowering net emigration by 900 per year means a difference of 27,000 people by the year 2000, and nearly 100,000 people by 2030.

Although not shown in these tables and figures, a total elimination of net emigration, combined with a continuation of current fertility, would yield a population of 142,000 by century's end and 260,000 by 2030! If fertility remains at approximately 3.5 live births per woman for the foreseeable future, it is critical that net emigration be kept at close to 1,000 per year if growth is to be kept fairly slow.

The first two scenarios concentrated on alternative levels of net emigration. Fertility, too, could change in the future. Although it might increase again, it is more likely that it would decline. If the growth under Scenario B is deemed too high, what fertility level is needed to counteract reduced net emigration and assure slower growth?

Scenario C examines the outcome of a decline in fertility to 2.8 live births per woman by 1990 combined with a reduction of net emigration from 1800 to 900 per year. The population of Grenada would increase to 107,910 by 2000 and to over 126,000 by 2030, after which any further growth would be minimal. Thus should net emigration show signs of declining in the years ahead, a reduction in fertility to 2.8 or thereabouts might be advisable if rapid population growth is not considered in the best interests of the country.

Scenario D, though based on an unrealistic fertility level, has been constructed to illustrate the built-in momentum for growth in a young population that has recently exhibited relatively high fertility. Even if the total fertility rate fell to 2.1 live births per woman and net migration was zero, Grenada's population would still grow to 124,402 by 2000 and to nearly 162,000 by 2030.

How can a population almost double in size when its fertility is at the replacement level? (This scenario is based on 2.1 live births, the number needed to replace a population in the long run in the absence of migration.) As noted earlier, Grenada has a young population. The generation of young people is so large that as they pass through their reproductive years, even if the women average only 2.1 live births, the number of births will remain large for at least two generations before leveling off. Indeed, it would be 2040 before population stabilised in Grenada at 165,000. This built-in momentum for growth suggests that it is almost impossible to put an end to growth in the absence of emigration.

Numerically speaking, population growth does not appear to present a serious problem in Grenada in the future. If current conditions remain unchanged, the island's population will decline ever so slowly. However, any significant drop in net

Table 4: Percent Distribution of Population by Age-Group in Grenada, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
Scenario A						
Under 15	41	41	37	36	35	34
15–64	53	53	57	58	57	55
65 or older	6	6	6	6	8	11
Scenario B						
Under 15	41	39	37	35	34	33
15–64	53	55	58	61	61	59
65 or older	6	6	5	4	5	8
Scenario C						
Under 15	41	38	32	31	28	27
15–64	53	56	63	64	65	63
65 or older	6	6	5	5	7	10
Scenario D						
Under 15	41	36	27	25	23	21
15–64	53	59	68	70	71	68
65 or older	6	5	5	5	6	11

emigration might warrant a decline in fertility if growth is considered too rapid for the benefit of the nation.

Age Distribution: In examining the 1970–80 changes, it was noted that population varies in age composition as well as in numbers. This will be the case in the future as well, of course, and age distribution will vary according to the scenario followed.

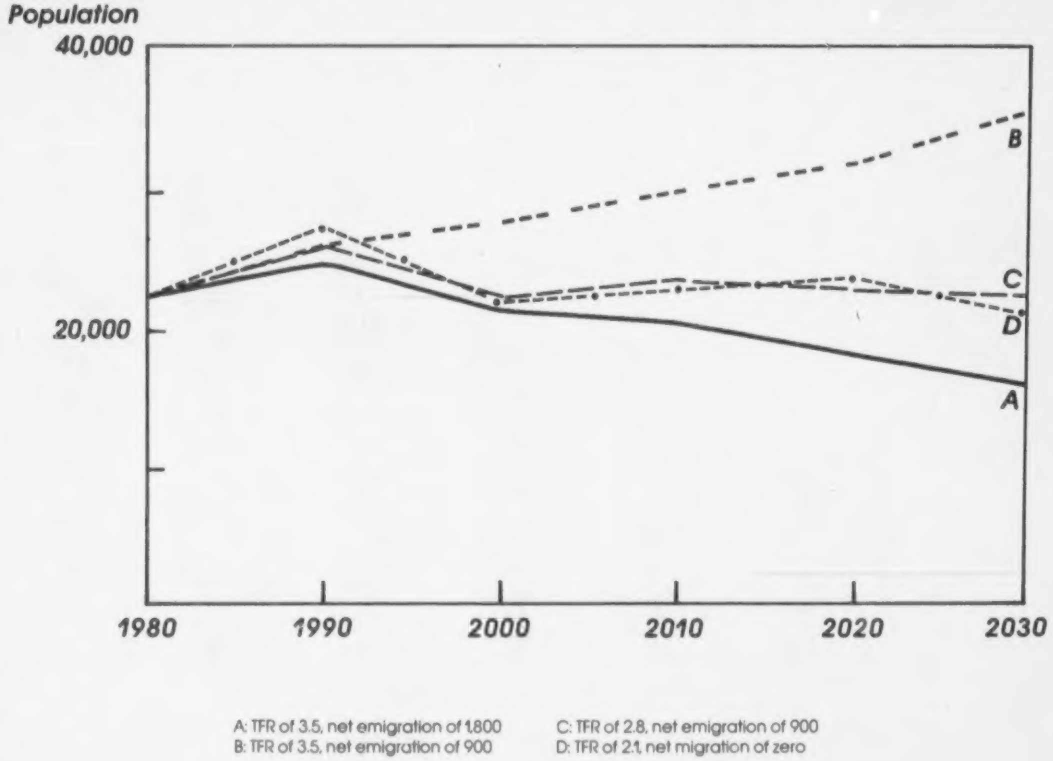
According to the estimates developed for this report, 41 percent of the population in 1980 were under 15, 53 percent were between 15 and 64, and 6 percent were 65 or older (see Table 4). Under Scenario A, by the turn of the century the proportion of youth would have fallen to 37 percent while that between 15 and 64 would have grown to 57 percent. The elderly proportion would not change.

The increasing proportion in the active ages reflects the higher fertility of the 1960s and 1970s compared with the lower fertility anticipated for the 1980s and 1990s. After 2020, although the percent who are young would continue to fall, this would be less because of increases in the active population than it would be because of growth in the elderly group, which by 2030 would represent 11 percent of the population of Grenada.

Under Scenario B, fewer young adults would leave the island. Thus, the proportion 15–64 would be somewhat higher than under Scenario A, and the growth of the elderly population, proportionately speaking, would not be as dramatic. In this scenario, by 2000 the proportions would be 37 percent for youth, 58 percent at active age, and 5 percent elderly, hardly any different than under A. By 2030, however, the proportions would be 33, 59, and 8, respectively.

The lower fertility assumed under Scenario C would result in some fairly significant shifts in age distribution. The proportion under 15 would begin to fall while that of the 15–64 age-group would grow over time. Indeed the proportion under 15 would be 32 percent in 2000 and only 27 percent in 2030. Although the elderly proportion would increase, its share of the total numbers would be about the same as in other scenarios. The active population would increase however.

Figure 3: School-Age Population (5–14) in Grenada, 1980–2030



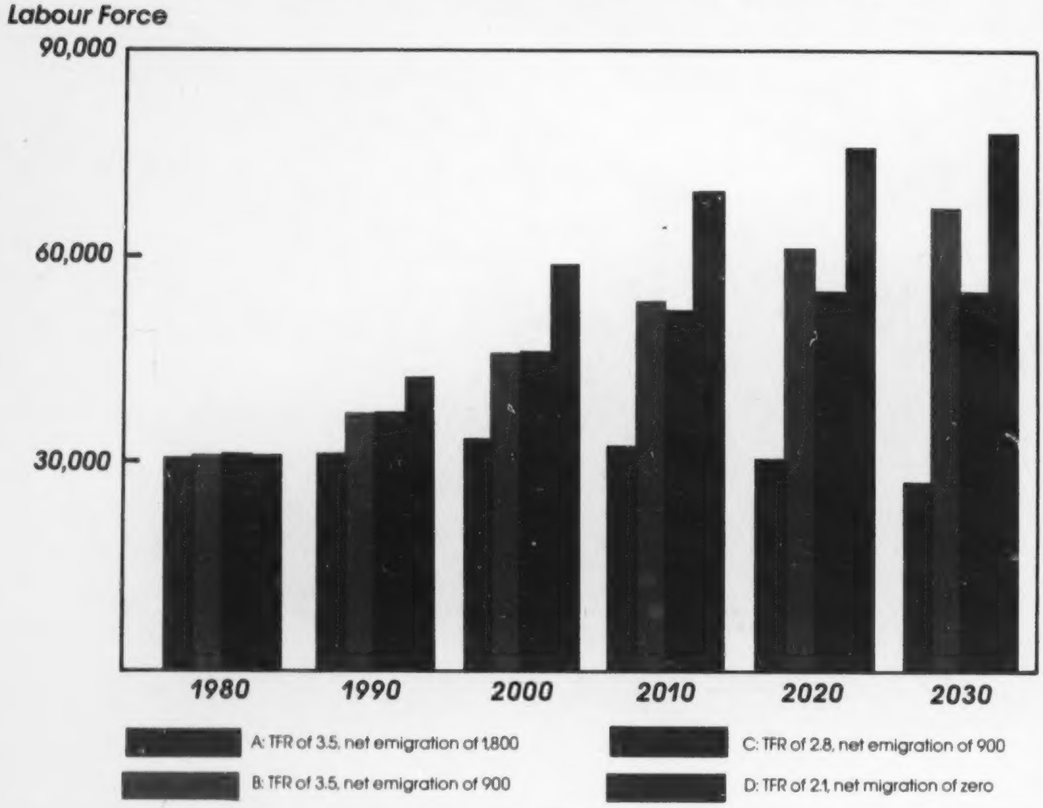
As a result, the dependency ratio in 2000 under Scenario C would be only 58 "dependents" per 100 "active" persons, compared with 75 under Scenario A. This illustrates the positive impact of a decline in fertility. With fewer people under 15, the problem of dependency is considerably alleviated.

Changes in the proportional distribution of a population are important for policymakers, particularly in the long run. Perhaps even more important are the numerical changes that result from the variations in fertility and migration. Of particular relevance are school enrollments, the number of people in the labour force, and the population that reaches the retirement stage of life.

School Enrollment: Actual statistics on school enrollments by age are not available for Grenada at this time. By using the total population between the ages of 5 and 14 as a surrogate, however, a fairly reliable estimate of changes in school enrollments can be made. According to this report's estimates for 1980, the population 5–14 numbered 23,128. Irrespective of scenario, little change can be expected over the next 20 years (see Figure 3; for supporting data, see Appendix Table B). Indeed, except under Scenario B, Grenada can assume no further increases in its school enrollments for the next 50 years at present rates. (Scenario D has not been included in this and the following sections because it is unlikely to occur.)

If net emigration is reduced while fertility remains at its current level (Scenario B), the number of persons 5–14 would increase to 26,918 in 2010 and to over 35,000 by 2030. On the other hand, if fertility is reduced to 2.8 and emigration is halved (Scenario C), the school-age population, after peaking

Figure 4: Labour Force in Grenada, 1980–2030



in 1990, would fall to less than 23,000 by 2030.

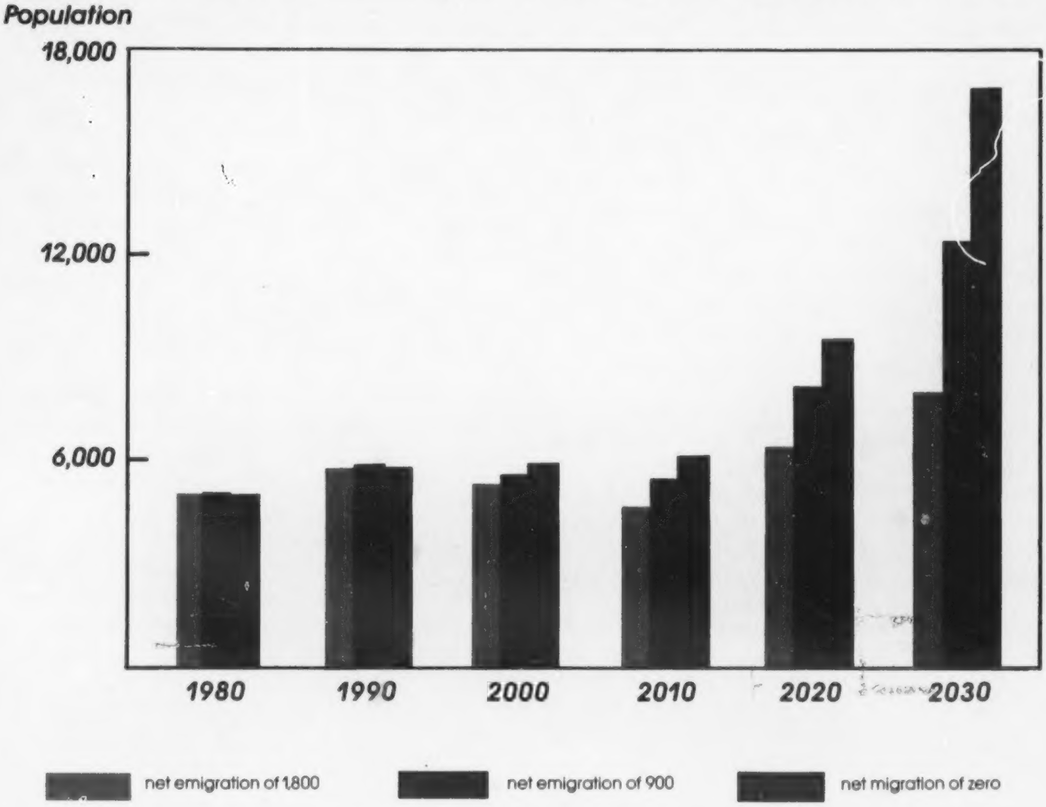
Perhaps most realistic is a continuation of the current demographic situation (Scenario A). After a slight increase to 25,057 in 1990, the school-age group would fall quite steadily, reaching less than 17,000 in 2030.

Grenada is in a fortunate position insofar as its educational system is concerned. Any substantial growth will not take place until the next century, if at all. In the meantime, this lack of growth in numbers could allow the nation to improve the quality of its educational institutions as well as to encourage continued enrollment among older children.

Labour Force: In this report, the International Labour Office's projections for the Windward Islands' rates of labour force participation have been used. All persons working or looking for work are included. Regardless of the scenario selected, more jobs will have to be created at least for the next 30 years just to maintain the current level of unemployment, which may well approach 20 percent.

Looking first at Scenario A—that is, examining the consequences of a continuation of current demographic behaviour—about 3,000 jobs would have to be created within the next 20 years (see Figure 4; for supporting data, see Appendix Table C). Currently an estimated 6,000 persons are unemployed out of a labour force of 30,752. If the unemployment rate remains constant, this means that by the year 2000 some 6,700 persons would be out of work but looking for a job out of a labour force of 33,760. Underemployment is not considered in this analysis. After the turn of the century, the size of the labour force would begin to fall slightly and by 2030 it would

Figure 5: Elderly Population (65 or Older) in Grenada, 1980–2030



be under 27,000, about 4,000 less than estimated in 1980.

Interestingly, the labour force would grow until the year 2000 while the overall population could be decreasing. This reflects the large cohort of people born prior to 1970 who will reach working age over the next few years. Even if fertility falls substantially in the future, the size of the generation now entering the labour force will not be affected, for these people are already born.

Any decline in net emigration would pose major economic problems insofar as employment is concerned. Under both Scenario B and Scenario C, the number in the labour force would grow to 46,161 by the year 2000—about 16,000 more than estimated for 1980. Close to 10,000 people could be unemployed if current levels continue to that year.

After the year 2000 the number of persons in the labour force would be smaller under Scenario C, simply because by that time the lower fertility assumed would be reflected in the number of adults. Indeed, by 2030, the difference in the size of the labour force between Scenarios B and C would be a not inconsequential 12,000 persons.

In sum, Grenada must accept the fact that it will witness some growth in its labour force at least until the turn of the century. Should net emigration be reduced, the problem will take on significant proportions. Either way, it is a matter to consider as Grenada faces the future.

The Elderly: In 1980, there were an estimated 5,250 people who were 65 years of age or older. Until 2010 that number will remain fairly stable irrespective of scenario (see Figure 5; for supporting data, see Appendix Table D). In 2010, the elderly population would range from 4,984 under A to 5,597 under B and C. (There is no difference between B and C as the assumed migration level is the same. Future changes in fertility can only affect the size of the elderly population after the year 2045.)

After 2010, however, the number of older islanders would surge, particularly if net emigration is reduced. Even with a continuation of current demographic behaviour the number would top 8,000 in 50 years.

The growth of the elderly population after 2010 irrespective of scenario reflects the high fertility that occurred in the mid-twentieth century. These are the people born around 1950 and 1960, when fertility was higher, who will have survived to reach retirement age by 2020 and 2030.

That there will be many elderly in the population and that they will comprise a fairly large proportion of the population is almost certain. What is important is that policymakers be aware of this and begin to make plans for the increased costs involved with growing numbers of older residents.

Conclusion: Insofar as future population size is concerned, Grenada appears to be in a favourable position. If present demographic behaviour is maintained, growth will soon end. Even if net emigration declines somewhat, growth should not be an insurmountable problem.

Nevertheless, changes in age composition will pose significant problems for years to come, problems that can be traced to the past demographic behaviour of Grenadians. The increase in the size of the labour force as well as the later increase in the number of elderly are issues that must be addressed if Grenada is to survive the next 50 years without serious social difficulties.

Appendices

Table A: Current and Projected Population of Grenada, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	91,300	89,950	88,624	85,490	80,038	71,420
B	91,300	101,263	115,338	130,782	147,675	165,650
C	91,300	99,742	107,910	116,293	122,731	126,361
D	91,300	109,497	124,402	140,340	153,325	161,703

A: TFR of 3.5, net emigration of 1,800
B: TFR of 3.5, net emigration of 900
C: TFR of 2.8, net emigration of 900
D: TFR of 2.1, net migration of zero

Table B: Current and Projected School-Age Population (5–14) in Grenada, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	23,128	25,057	21,625	20,982	18,675	16,492
B	23,128	26,148	26,918	30,150	32,027	35,349
C	23,128	26,148	22,550	23,863	23,416	22,756
D	23,128	27,209	22,283	23,330	23,587	22,590

Table C: Current and Projected Labour Force in Grenada, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	30,752	31,382	33,760	32,929	30,641	26,774
B	30,752	37,265	46,161	53,477	60,949	67,576
C	30,752	37,265	46,161	51,443	54,410	55,303
D	30,752	42,963	58,533	69,640	75,532	78,040

Table D: Current and Projected Elderly Population (65 or Older) in Grenada, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	5,250	5,810	5,566	4,984	6,491	8,006
B and C	5,250	5,812	5,743	5,597	8,122	12,589
D	5,250	5,814	5,934	6,217	9,751	17,173

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Belize: Yesterday, Today & Tomorrow

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Belize:
Yesterday, Today & Tomorrow

by Leon F. Bouvier
April 1984

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Belize: Yesterday, Today & Tomorrow

Belize Yesterday

Prior to the 1861 census, the population of what is now the independent nation of Belize was extremely sparse—in 1835, it totaled 11,121. At all censuses prior to 1861 the population was concentrated around Belize city; no mention was made of settlements in the other parts of the then-colony known as British Honduras. Growth between 1835 and 1861, when 25,635 persons were enumerated, was due not so much to expansion in the Belize city area, which by then had grown to 5,067, but rather to growth in the Northern District through immigration from Mexico.

Between 1861 and 1901, the population of the nation of Belize grew at just under 1.0 percent per year, so by 1901 it totaled 37,479 (see Table 1). Little is known about the demographic variations that may have accounted for this fairly low rate of growth. It can be assumed that both birth and death rates were fairly high but it is particularly difficult to make estimates about migration, whether into or out of the region.

Crude birth rates of approximately 40–45 per 1,000 population and crude death rates of around 30–35 per 1,000 would about account for the growth from 1861 to 1901 and mean that net international migration was almost nil. That may well reflect the nineteenth century demographic situation in Belize: high fertility, high mortality, and little or no gain or loss through migration.

Table 1: Population of Belize, 1861–1931

Year	Number
1861	25,635
1871	24,710
1881	27,452
1891	31,471
1901	37,479
1911	40,458
1921	45,317
1931	51,347

Decennial counts of the population were taken in 1911, 1921, and 1931, followed by a census in 1946. By the latter year, Belize had a population of 59,220. Again, this represented annual growth of about 1 percent. Data on births and deaths are available for between 1931 and 1946, and thus some indirect estimates of net migration can be developed. While the population increased by 7,873 over the 15-year period, natural increase (that is, births minus deaths) amounted to 12,191.

Net emigration of some 4,300 people can therefore be assumed if the 1931 and 1946 censuses were comparable in coverage. Overall, this suggests an average crude birth rate of 36 per 1,000 population and a crude death rate of 21 per 1,000 for the period 1931–46. It also means that the rate of net emigration was about 5 per 1,000. Such a pattern may also have reflected the situation before 1931, although this cannot be known for certain.

By 1946, the crude birth rate was 34.5 and the crude death rate 17.0. This resulted in a rate of natural increase of 1.8 percent. From 1946 to 1960, demographic data for Belize improved substantially, due in large part to the seminal study by Caribbean demographers George Roberts and Jack Harewood.* The following discussion of the Belize population from 1946 to 1960 is based on their research.

Between 1946 and 1960, growth in Belize was very rapid. By 1960, the population had surpassed 91,000—some 32,000 more than counted 14 years earlier. This reflects

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*G.H. Roberts and Jack Harewood, *Estimates of Intercensal Population by Age and Sex and Revised Vital Rates for British Caribbean Countries, 1946–1960* (University of West Indies, 1964).

Table 2: Population of Belize and Rates of Birth, Death, and Natural Increase, 1946–70

Year	Population	Crude Birth Rate	Crude Death Rate	Rate of Natural Increase
	(number)	(per 1,000 population)		(percent)
1946	59,220	34.5	17.0	1.8
1950	66,720*	40.3	12.9	2.7
1955	78,210*	45.0	11.2	3.4
1960	91,220	44.4	7.8	3.7
1970	119,934	40.0 (est.)	7.0 (est.)	3.3

*End-of-year estimates developed by Roberts and Harewood.

an average annual rate of growth of over 3 percent. Such a rate can be explained by the fact that in Belize fertility went up, mortality went down, and net migration was almost nil.

The crude birth rate, 34.5 in 1946, increased to 40.3 per 1,000 population in 1950 and reached around 45 per 1,000 in the late 1950s. This may well be the highest rate ever recorded in Belize. On the other hand, the crude death rate, 17.0 in 1946, gradually fell—to 12.9 in 1950 and 7.8 in 1960 (see Table 2). Overall, natural increase amounted to 31,270 (42,800 births minus 11,530 deaths). Another 730 people added to the population can be explained by net immigration.

This should not be taken to mean that gross migration was not substantial. Although it is difficult to verify, it seems highly likely that many Belizeans left their country around the same time that a number of immigrants from nearby Mexico and Guatemala entered the nation.

The rapid rate of growth noted immediately following World War II continued through 1970. By that time, the population numbered 119,934, which translates to an average annual rate of growth of 2.8 percent over the decade. In that ten-year period, fertility remained high while mortality fell a bit. Indeed, natural increase totaled 38,351.

Given this high level of natural increase, net emigration must have approached 10,000, or about 1,000 per year. Again, presumably many Belizeans departed, perhaps for the metropolitan countries of Canada and the United States, while still more Central Americans and Mexicans entered. Nearly 4,000 Belizeans emigrated to the United States during the 1960s (see Table 3).

The growth during the post-World War II period is remarkable and considerably larger than that noted elsewhere in the English-speaking Caribbean region. The population of Belize doubled between 1946 and 1970—a period of just 24 years. This means an average annual rate of growth of about 3.0 percent. Interestingly, it took 55 years for the immediately previous doubling—from 1891 to 1946.

Fertility, which had always been high in Belize, actually increased in the 1950s and 1960s. Mortality, high in the nineteenth and early twentieth centuries, fell substantially in the postwar era. However, this reflects

Table 3: Permanent Belizean-Born Immigrants Admitted to the United States, 1955–79

Year	Number
1955–59	660
1960–64	1,069
1965–69	2,805
1970–74	2,485
1975	534
1976	661
1977	930
1978	1,033
1979	1,063

Belize's young age composition more than it does progress in extending life.

Belize has differed considerably from other English-speaking Caribbean countries in its international migration patterns. Except for the 1931–46 period, there is no strong evidence of any large movements away from the nation until the 1960s, when emigration apparently increased substantially.

Clearly, migration has been a tremendously important demographic factor in the cultural development of Belize. The shifts in racial and ethnic groups as a result of migration streams in and out of the nation have contributed to major changes in the composition of the nation.

Belize Today

Over the recently concluded decade of the 1970s, Belize's population grew from 119,934 to 145,208. This increase of 25,274 represents a decennial growth of 21.2 percent, or an average annual rate of growth of 1.9 percent.

Crude birth rates, hovering around 40 per 1,000 population in 1970, fell ever so slightly over the decade to 38.7 in 1973 and 38.5 in 1980. (By 1982 the crude birth rate was estimated to be 32 per 1,000.) Such a level of fertility suggests between 4.1 and 4.5 births per woman.

Mortality, on the other hand, fell substantially during the 1970s. In 1970 it was estimated to have been about 7.0 per 1,000. It may have fallen below 5 per 1,000 by 1980. A 1978 study by U.S. demographer William Groff indicated that life expectancy at birth in Belize in 1970 was a very high 70.9 years (69.4 for males and 71.6 for females). The combination of this high level with a very young population (median age about 15) makes an extremely low death rate not implausible.

The result of continued fairly high fertility and low mortality is a high rate of natural increase—well over 3.0 per year. These data imply that net emigration continued at a high level throughout the 1970s. Groff estimated it to be 9,836 for the four-year period 1971–74. And some 6,500 people moved to the United States during the 1970s.

Using the 1980 census and the reverse projection technique,* it is possible to derive some fairly reasonable estimates of the decennial level of net emigration. It seems close to 15,000, with somewhat more women than men leaving the country. This figure yields an annual net emigration of 1,500. Natural increase over the decade amounted to about 40,000. This reinforces the estimate of 15,000 net emigration. That is to say, the Belizean population in 1970 of about 120,000 plus 40,000 (natural increase) minus 15,000 (net emigration) approximates the population in 1980 of about 145,000.

According to Groff's estimate for the 1971–74 period, gross migration (that is, the total number entering and leaving Belize) was much greater than the net migration; furthermore, it differed by race and ethnic background. Of the 30,000 or so who left the country during these four years, some 29,000 were Belizeans; of the 20,000 or so who moved to Belize, 16,000 were Mexican and 3,000 Guatemalan.

Nevertheless, at first glance the racial composition of the nation does not appear to have changed much since 1946 (see Table 4). However, different interpretations of race may have contributed to the similarities between the censuses. For example, "mixed" in 1946 included those of mixed European and African descent as well as mixed Spanish and Indian background (Mestizo). It is quite possible that the former were included under Black

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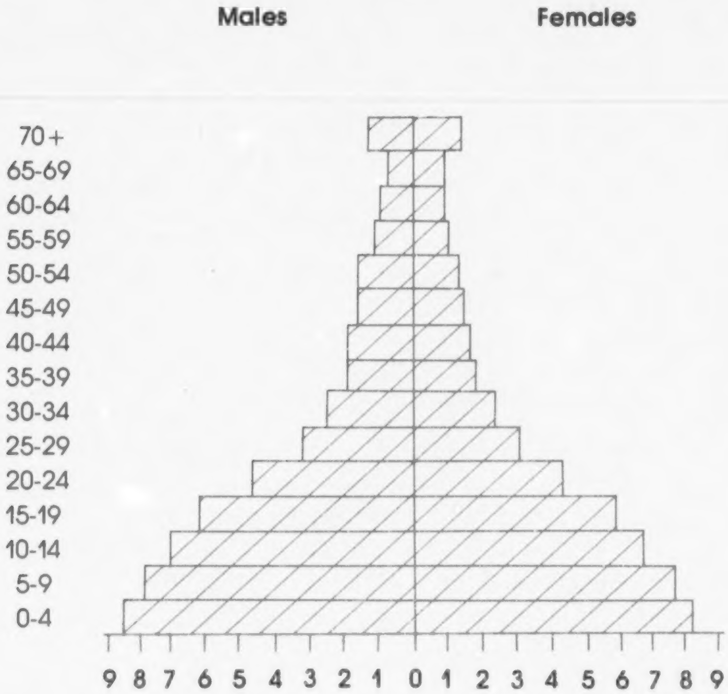
*The reverse projection method "survives" the population by age and sex backward in five-year intervals. By using appropriate survival rates, a population—males aged 45–49 in 1980, for example—can be restored to the number who would have been 40–44 in 1975 and 35–39 in 1970. Assuming relatively complete censuses in both 1970 and 1980, any differences in the age-sex distribution in 1970 between the restored and the actual enumerated population must be accounted for by either immigration or emigration. This yields only a rough estimate of the level of net migration over a decade; nonetheless it is the best available, short of actual data on migration itself.

Figure 1: Age-Sex Distribution of Belize, 1980



(that is, Creole) in 1980. Caribs were counted as a separate group in 1946 but not in 1980.

Thus a racial distribution that appears to be very similar may indeed not be so upon further reflection. Turning to "language primarily spoken," 59.7 percent spoke English in 1946 and 22.2 percent spoke Spanish; by 1980, the respective proportions were 50.6 and 31.6. This lends further credence to the suggestion that the racial and ethnic composition of the nation is being affected by selective immigration and emigration.

Table 4: Racial Distribution of Population in Belize, 1946 and 1980

Racial Group	1946	1980
	(percent)	
American Indian	17.0	17.1
White	3.9	4.2
Black (Creole)	38.4	39.7
Asian	2.6	2.2
Carib	7.0	—
Mixed	31.1	33.2
Not Stated	—	3.6

The age distribution of Belize's population changed slightly between 1970 and 1980 (see Figure 1 for the distribution in 1980). The median age increased from 15 to 16.5 and the proportion under 15 years of age fell from 49.3 in 1970 to 46.1 in 1980. The proportion of elderly hardly varied—from 4.2 to 4.3. Most Caribbean nations experienced fairly significant variations in age distribution between 1970 and 1980, the result of drops in fertility. However, Belize's fertility fell only slightly and as a result it remains a very "young" nation.

The dependency ratio (the number of persons under 15 and those 65 or older per

100 persons aged 15–64), which serves as a rough indicator of a country's economic situation, was not noticeably altered—falling from 115 to 107 over the decade. In other words, in 1980 there were 107 persons of dependent age per 100 persons of active age—a high ratio compared with the situation in other English-speaking Caribbean nations.

Although few changes were noted in the proportional distribution of the population, numerical changes in important age groups are perhaps of more concern to the government and other institutions. Looking first at school enrollments, the population between the ages of 5 and 14 increased from 37,440 in 1970 to 42,734 in 1980—a gain of 5,294, or 14.1 percent. Although everyone that age may not be attending school, this age category serves as a reliable surrogate for actual school enrollments. Such an increase, if maintained in the future, must be taken into consideration when developing educational plans for the nation.

At the other end of the life cycle, the elderly population (those aged 65 or older) grew from 5,142 in 1970 to 6,685 in 1980—a 30 percent increase. Again, this suggests the need for further planning to be in a better position to assist these people, particularly if such growth continues.

The number of people in the important active years—between 15 and 65—also grew substantially: from 77,352 to 95,933. This increase of over 18,000 is particularly meaningful given the need to create additional jobs for this large group.

As Belize faces the future, it is in an unusual demographic situation. On the one hand, it is growing rapidly—despite continued net emigration. On the other hand, it remains sparsely settled and additional growth is certainly realistic and desirable, within limits.

The question of how that growth should come about remains unanswered. Perhaps the next section of this report will assist policymakers to arrive at more informed decisions as to future directions.

Belize Tomorrow

In this section of the report a variety of scenarios are developed that depict the size and age distribution of Belize under various assumptions about demographic behaviour. These should not be interpreted as predictions of the nation's demographic future; rather, they are projections of what the size and age distribution would be under certain clearly stated assumptions about future fertility, mortality, and migration.

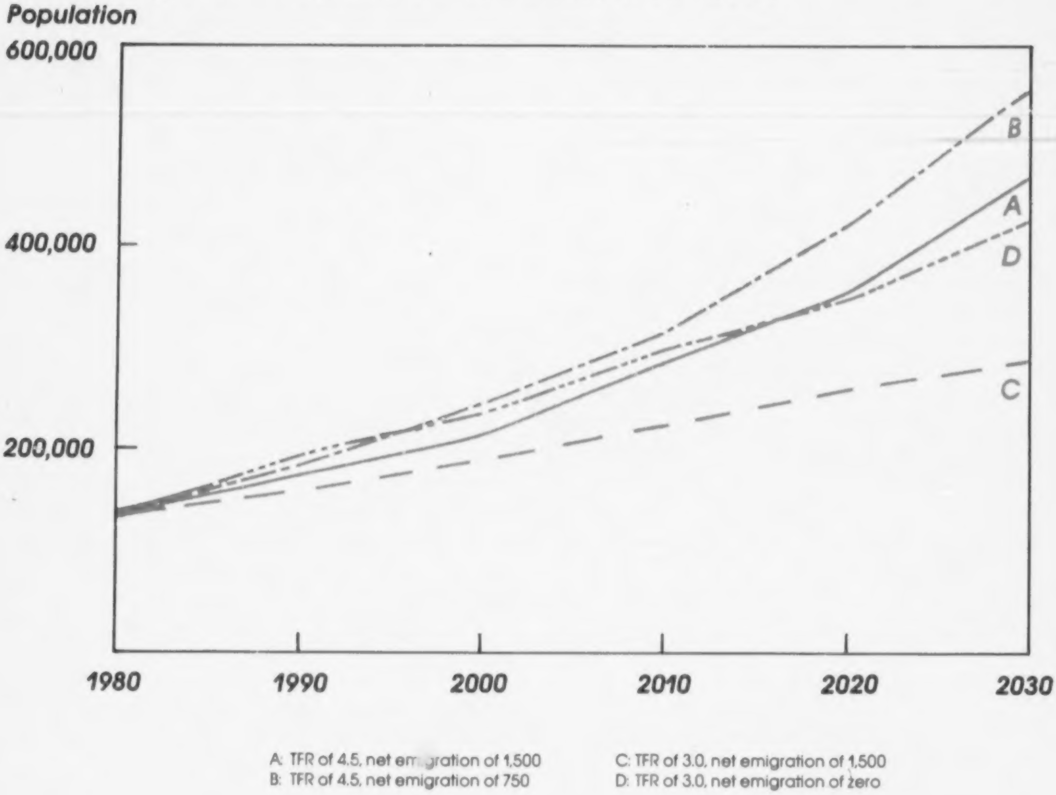
As already noted, Belize is currently underpopulated; growth, at least for the short run, is not seen as a major problem. Nevertheless, there are limits to all growth and, as will be illustrated below, the built-in momentum inherent in a young population, which Belize has, can lead to surprisingly large numbers in a rather short time. It is hoped that these alternative scenarios about future population size and age distribution will assist policymakers as they deliberate the future direction of the nation's size and composition, be it age, sex, or ethnic makeup.

Demographic Assumptions: Three different postulates of fertility behaviour are used. One assumes a continuation of the current total fertility rate of 4.5 live births per woman. A second assumes a decline in that rate to 3.0 by 1990, with no change anticipated thereafter. Finally, strictly for illustrative purposes, a total fertility rate of 2.1, again beginning in 1990, is used in one of the scenarios. This last rate is the level necessary to replace the population in the long run in the absence of migration.

Only one set of mortality assumptions is used. Female life expectancy at birth is expected to climb from 72.5 to 77.5 years by the turn of the century, with no further change after that date. For males, life expectancy is assumed to increase from 68.5 years to 74 years over the same period.

Three migration postulates are used in these projections. One assumes a continuation of the current level—that is, net emigration of about 1,500 per year. A sec-

Figure 2: Population of Belize, 1980–2030



ond hypothesis assumes that net emigration will be half that amount, or 750 per year. Finally, an assumption of net migration of zero is also included in the analysis. This would mean that as many people leave the nation as enter it—a real possibility, given current conditions in Central America.

Based on various combinations of these assumptions about fertility and migration, a number of scenarios for Belize have been prepared (see Figure 2; for supporting data, see Appendix Table A):

Scenario A – current fertility (4.5) and current net emigration (1,500 per year)

Scenario B – current fertility (4.5) and declining net emigration (750 per year)

Scenario C – declining fertility (3.0) and current net emigration (1,500 per year)

Scenario D – declining fertility (3.0) and net migration of zero.

Two other scenarios have also been prepared for illustrative purposes and will be discussed briefly. Both assume net migration to be zero. Scenario E, however, assumes a total fertility rate of 4.5 and F assumes replacement-level fertility of 2.1.

What these scenarios mean for the future of Belize is discussed in the remainder of this report. These selected alternative projections are but six of many possible combinations of fertility and migration, but they represent what appear to be reasonable hypotheses of the population directions the nation may take over the next 50 years.

Population Projections: A continuation of current demographic behaviour (that is, a total fertility rate of 4.5 and net emigration of 1,500 per year) would result in substantial and continuing population growth. Scenario A depicts the future size of Belize under those conditions. By 2000, the population would reach 219,805, nearly 75,000 more than in 1980. By 2030 the population would number some 464,000—more than three times its current size. Furthermore, at that time, the rate of growth would be 2.6 percent, meaning a further doubling of the population in 27 years. Thus the million mark would be reached less than 80 years from today.

Such growth is enormous and is attributable to both the high fertility and the youth of the population. Nevertheless, such a projection is not fantasy; it could occur. Furthermore, it may be incorrect to assume that net emigration will remain at its current high level. The number of persons entering Belize from neighbouring countries has increased in recent years and such a pattern may well continue in the future.

Scenario B has been prepared with that in mind—a continuation of the current level of fertility but with net emigration reduced by half. The resulting numbers are awesome to contemplate: 244,427 by 2000 and over 565,000 by 2030, at which time the population would be growing 2.8 percent per year.

Although assuming net migration of zero is perhaps not plausible, Scenario E, which also assumes a continuation of current fertility, serves to illustrate what would occur under such conditions (not shown in Figure 2, but the data are in Appendix Table A). As expected, growth rates would be even higher. The population would reach 269,013 at the turn of the century and nearly 666,000 just 30 years later, when the annual rate of growth would be about 3.0 percent (which yields a doubling time of 23 years).

From these calculations it seems quite obvious that fertility cannot remain at the current high level for very much longer. Only if net emigration were to increase dramatically would the future size of the population be reduced to more manageable levels given such a high fertility.

If the projections using high levels of fertility—irrespective of emigration—seem inordinately high, then some reductions in fertility may be desirable. Scenario C illustrates what would occur if net emigration remained at the current level of 1,500 per year, but fertility fell to 3.0 live births per woman by 1990. By the turn of the century the population would be 192,230. In 2030, Belizeans would number close to 280,[illegible]0 and the rate of growth would be 1.0 percent, representing a doubling time of 70 years.

Such an increase of some 135,000 over a 50-year period would seem to be quite tolerable, representing as it does an average annual rate of growth of 1.3 percent. Lowering the level of fertility from 4.5 to 3.0 in a mere ten years would present quite a challenge, but such rapid declines have already occurred in other developing countries like Costa Rica and Barbados. It is not an unachievable task, if indeed this goal is considered appropriate for the nation.

To be sure, to reach this goal lower fertility would have to be accompanied by continuing high levels of net emigration. A glance at Scenario D illustrates the impact of reducing that demographic variable to zero while keeping fertility at 3.0. By the turn of the century Belize's population would be 236,591 and the 425,000 mark would be passed by 2030.

A halving of current net emigration would of course result in a somewhat smaller population eventually. (Indeed, a combination of a total fertility rate of 3.0 with 750 net emigration per year would mean a population of about 215,000 in 2000 and 350,000 in 2030.) From these calculations, it appears that a substantial reduction in Belizean fertility would contribute to a slower rate of growth though a larger, and perhaps more manageable, population at least over the next 50 years.

As stated earlier, Belize's numbers will increase quite rapidly in part because of its youth. There is a built-in momentum for growth in such societies. Scenario F is illustrative of this momentum (not shown in Figure 2, but the data are in Appendix Table A). It assumes that beginning in 1990 Belizean women average 2.1 live births—the number needed to replace a popula-

Table 5: Percent Distribution of Population by Age-Group in Belize, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
Scenario A						
Under 15	46	43	43	42	41	41
15–64	50	53	53	54	55	55
65 or older	4	4	4	4	4	4
Scenario B						
Under 15	46	42	43	41	40	40
15–64	50	54	53	55	56	55
65 or older	4	4	4	4	4	5
Scenario C						
Under 15	46	42	35	34	32	30
15–64	50	54	60	61	63	63
65 or older	4	4	5	5	5	7
Scenario D						
Under 15	46	40	35	32	31	29
15–64	50	56	61	64	64	64
65 or older	4	4	4	4	5	7

tion in the long run without any migration. Even in such a favourable situation Belize's population would still grow to 216,579 in 2000 and to over 310,000 in 2030. By 2050 it would be approaching a no-growth situation at around 360,000.

Such a growth pattern may appear illogical. However, it simply reflects the fact that the percent of youth in Belize is very large. As women pass through their reproductive years, even though they may only average 2.1 live births the number of women is so great that the number of births also grows. It takes two or even three generations of low fertility to eventually reach the point where deaths equal births. Thus even if fertility were to fall well below 3 live births per woman the population would still grow considerably in future years, even with net emigration.

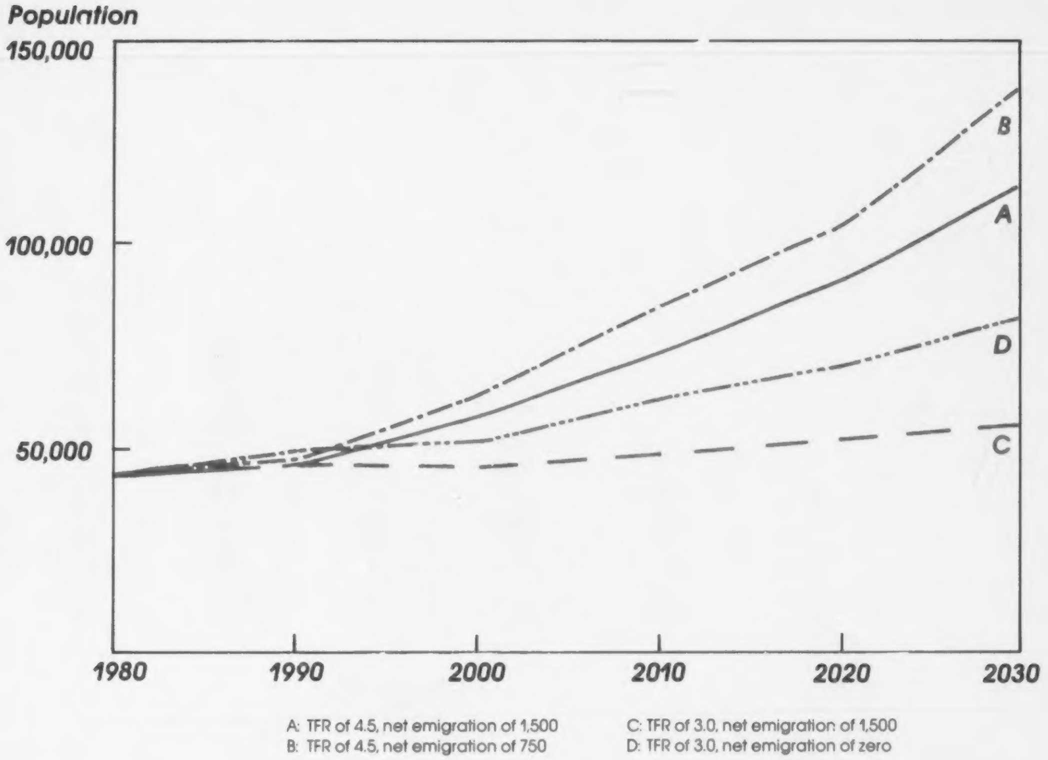
The important question remains: How much more should Belize grow? Once a goal is set, various combinations of fertility and migration can lead the nation in the proper direction towards achieving it.

Changes in demographic behaviour affect the age distribution of the population as much as they affect its size. According to the 1980 census, 46 percent of Belizeans were under age 15; another 50 percent were between 15 and 64; the remaining 4 percent were 65 or over. Under Scenario A or B, the proportion of youth would fall slightly over the next 50 years to either 40 or 41 percent while the proportion of the elderly would remain fairly static at 4 or 5 percent (see Table 5). As a result, the working-age population (15–64) would increase proportionately to 55 percent.

The slight decline in the dependent age population, whether young or old, would be an encouraging development. The dependency ratio would drop a bit, from 104 in 1980 to 82 in 2030. In other words, 100 working-age persons would support 82 dependent-age individuals in that year rather than the 104 in 1980.

Should the demographic patterns of Scenario C or D be followed, considerable progress in reducing the dependency ratio would be possible. This of course reflects the declining fertility assumed in both these scenarios. From 46 percent of the total population being under 15 in 1980, the proportion would fall to 35 percent in 2000 and to 29 or 30 percent in 2030. On the other hand, the proportion

Figure 3: School-Age Population (5–14) in Belize, 1980–2030



of elderly would grow to 7 percent in 2030. The changes in dependency ratio would be significant—from 104 in 1980 to 64 in 2000 and then to 56 in 2030. The impact of declining fertility is clearly considerable and independent of the level of net emigration.

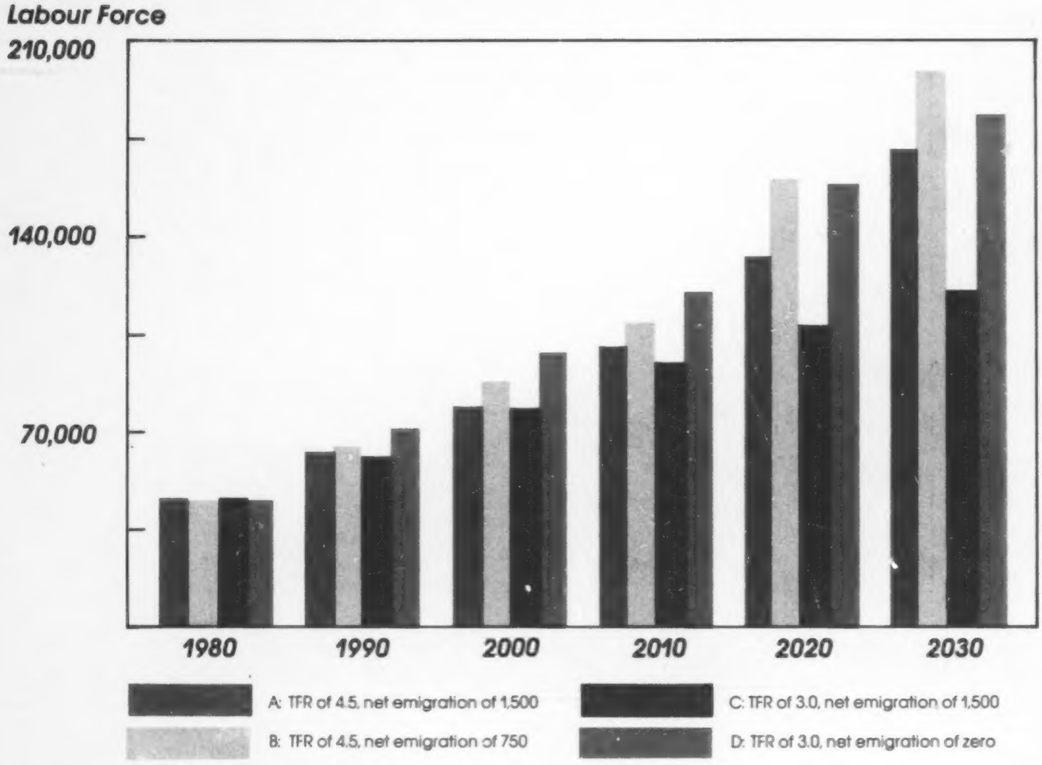
More important than changes in proportions among age-groups is the change that may occur in the size of important groups, such as those in school, in the labour force, and among the elderly. Although rates are important, numbers may well be more significant for planning purposes.

School Enrollment: In lieu of updated information on actual school enrollments, the population of 5–14 year olds is relied on as a surrogate for the number enrolled in schools. For most developing countries, such a procedure generally serves the purpose quite adequately.

In 1980, a total of 42,734 persons between 5 and 14 were enumerated in the Belizean census. A continuation of current levels of fertility and migration (Scenario A) would lead to substantial increases in future years (see Figure 3; for supporting data, see Appendix Table B). By the turn of the century that population would increase by 16,000, or 38 percent. And the number in school would almost triple within 50 years, to over 117,000. With decreased net emigration (Scenario B), school enrollments would grow even more rapidly—to 64,394 in 2000 and to over 140,000 in 2030, which would be getting close to four times the current level.

Only through substantial declines in fertility can school enrollments be kept within manageable limits. Under Scenario C the number would increase slightly, to 44,119, by the turn of the century and then grow by another 10,000 and top 54,000 in 2030. Thus if Scenario C comes to pass, over the

Figure 4: Labour Force in Belize, 1980–2030



50-year period 1980–2030 school enrollments, as defined in this report, would increase by a mere 0.5 percent annually. A reduction in net emigration would result in larger school enrollments. Yet even if net migration equalled zero (Scenario D), the number of children in school should only reach 52,097 in 2000 and just over 80,000 in 2030—providing of course that fertility remains at 3.0 live births per woman.

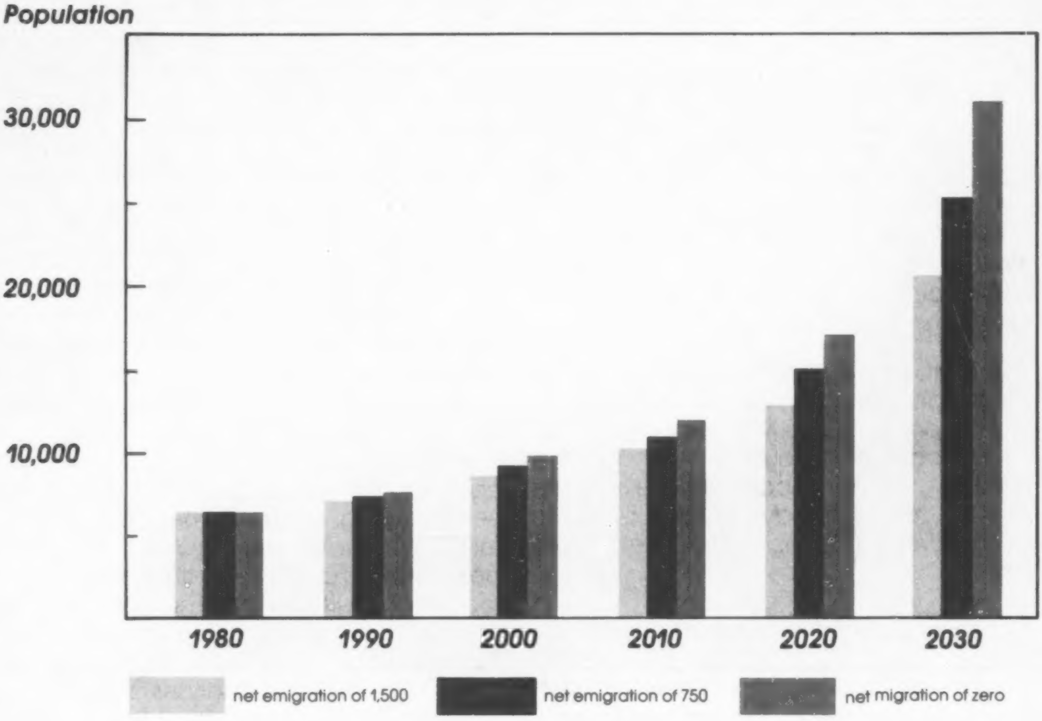
Labour Force: Like most other Caribbean nations, Belize is on the verge of an explosion in the size of its labour force. This report uses the labour force participation rate projections developed by the International Labour Office for the region.

Under Scenario A, a continuation of current demographic behaviour, the number of people in the labour force in the year 2000 would be 78,873, compared with 46,927 in 1980 (see Figure 4; for supporting data, see Appendix Table C). As the unemployment rate is currently around 15 percent, 7,000 Belizeans are out of work but looking for a job. To this daunting number could be added the many who are underemployed.

Simply keeping pace with this level of unemployment requires that some 28,000 jobs be created between now and the turn of the century if fertility and net emigration remain unchanged. By then some 12,000 Belizeans would be unemployed. The labour force would continue growing in the twenty-first century and by 2030 would surpass 170,000—well above the size of the total Belizean population today!

Irrespective of scenario, the labour force will grow significantly not only in the long run but also in the immediate future. Furthermore, any imminent declines in fertility can only affect the size of the labour force after the turn of the century.

Figure 5: Elderly Population (65 or Older) in Belize, 1980–2030



Looking at Scenario C, where fertility is low and net emigration is high, the labour force is projected to increase from its current 46,927 to 78,839 by the year 2000, about the same as under Scenario A. Thirty years later, however, the labour force would only total about 120,000, compared with over 170,000 if the fertility level stays at 4.5, reflecting the lower fertility cohort after 1990 entering the labour force some 15 years later.

Any decline in net emigration could have serious impact on the size of the labour force. Under Scenario D, with zero net migration, the increase is enormous—to 99,400 in 2000 and close to 187,000 in 2030. A combination of lower fertility and continued fairly high net emigration seems to be the only way to slow the growth of the labour force.

The increases expected in the number of people who need work reflect the higher fertility of the 1960s and 1970s, which together with falling mortality contributed to a large cohort of young people now in the job market. Furthermore, these projections are quite reliable given the fact that these people are already born. As this cohort passes through its life cycle it will pose potential problems for the society.

The Elderly: Just as Belize can be certain of an unusually rapid growth in its labour force, so too can it be certain of a later growth in its elderly population. The same large generation that will need jobs in the next 40 years will be approaching retirement sometime after 2020.

Under all scenarios the number of people 65 or older will grow considerably in future years (see Figure 5; for supporting data, see Appendix Table D). Fertility differentials are irrelevant given the fact that all the elderly in 2030 are already born. In

1980, 6,685 elderly people were counted in the census. By the year 2000 that number will reach between 8,500 and 10,000 depending on the level of net emigration.

A continuation of the current demographic pattern (Scenario A) would result in an elderly population of nearly 21,000 in 2030, three times today's size. Without any net emigration that number would be over 31,000. Furthermore, as noted earlier, the elderly will comprise a somewhat larger portion of the total population in that year than is the case today.

This growing number of persons of retirement age will pose special problems for the nation, particularly in the provision of health care and housing. Although the numbers will not reach massive proportions for awhile, it may be appropriate to begin planning in the near future for that time.

Conclusion: Belize's population will undoubtedly top 200,000 by the year 2000 and is very likely to reach 300,000 well before 2030. Indeed, the figure might be much higher than that if fertility remains high or if net emigration is limited.

Compared with the island nations of the Caribbean, Belize is in a very different situation. It is underpopulated, by any measure, and can tolerate additional growth. This is not the case with the small islands of the region. The question facing Belize is twofold: How much more should it grow and how should that be accomplished?

The first question relates to optimum size, be it 300,000 or more. Clearly, a continuation of the present rate of fertility will lead to a nation of perhaps a half million inhabitants within 50 years, at which time growth rates would still be high. The second question relates to its immigration policies. Recent levels of net emigration have not told the entire story of the changing composition of the nation. Although many Belizeans leave their homeland, a significant, though smaller, number enter from neighbouring countries. Because of the many complex issues involved, Belizean policymakers are faced with a difficult demographically related situation. It is hoped that the projections prepared for this report can be of some assistance. But much more detailed analyses are needed if they are to guide policymakers striving to determine what is in the best interest of the nation.

Appendices

Table A: Current and Projected Population of Belize, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	145,208	174,209	219,805	279,754	358,749	464,229
B	145,208	184,252	244,427	323,033	426,837	565,171
C	145,208	169,914	192,230	222,397	251,148	279,826
D	145,208	189,352	236,591	295,059	357,200	425,747
E	145,208	194,268	269,013	366,238	494,809	665,946
F	145,208	185,840	216,579	253,157	285,138	310,925

A: TFR of 4.5, net emigration of 1,500
B: TFR of 4.5, net emigration of 750
C: TFR of 3.0, net emigration of 1,500
D: TFR of 3.0, net migration of zero
E: TFR of 4.5, net migration of zero
F: TFR of 2.1, net migration of zero

Table B: Current and Projected School-Age Population (5–14) in Belize, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	42,734	47,302	59,024	74,818	91,782	117,376
B	42,734	48,110	64,394	84,418	106,837	140,563
C	42,734	47,302	44,119	49,281	52,707	54,334
D	42,734	48,903	52,097	62,139	71,405	80,052

Table C: Current and Projected Labour Force in Belize, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A	46,927	61,501	78,873	101,764	133,644	172,197
B	46,927	65,672	88,856	111,377	161,004	203,159
C	46,927	60,801	78,839	95,270	109,014	121,635
D	46,927	70,543	99,400	122,726	160,360	186,675

Table D: Current and Projected Elderly Population (65 or Older) in Belize, 1980–2030

Scenario	1980	1990	2000	2010	2020	2030
A and C	6,685	7,088	8,872	10,215	13,032	20,966
B	6,685	7,274	9,395	11,240	15,245	25,623
D	6,685	7,459	9,917	12,264	17,458	31,280

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